12-1A  
11-1

FAX: (206) 695-3731

HICKEY MARINE ENTERPRISES

DATE: 9-17-93

TO: Mr. Dick Gable &amp; Mr. Al Collinet

FAX: (503) 289-2272

FROM: Greg Speyer

PAGES: 2 (including this page)

please find soundings performed upon  
completion of dredging 9-14-93. If you  
have any questions please call.

Greg Speyer

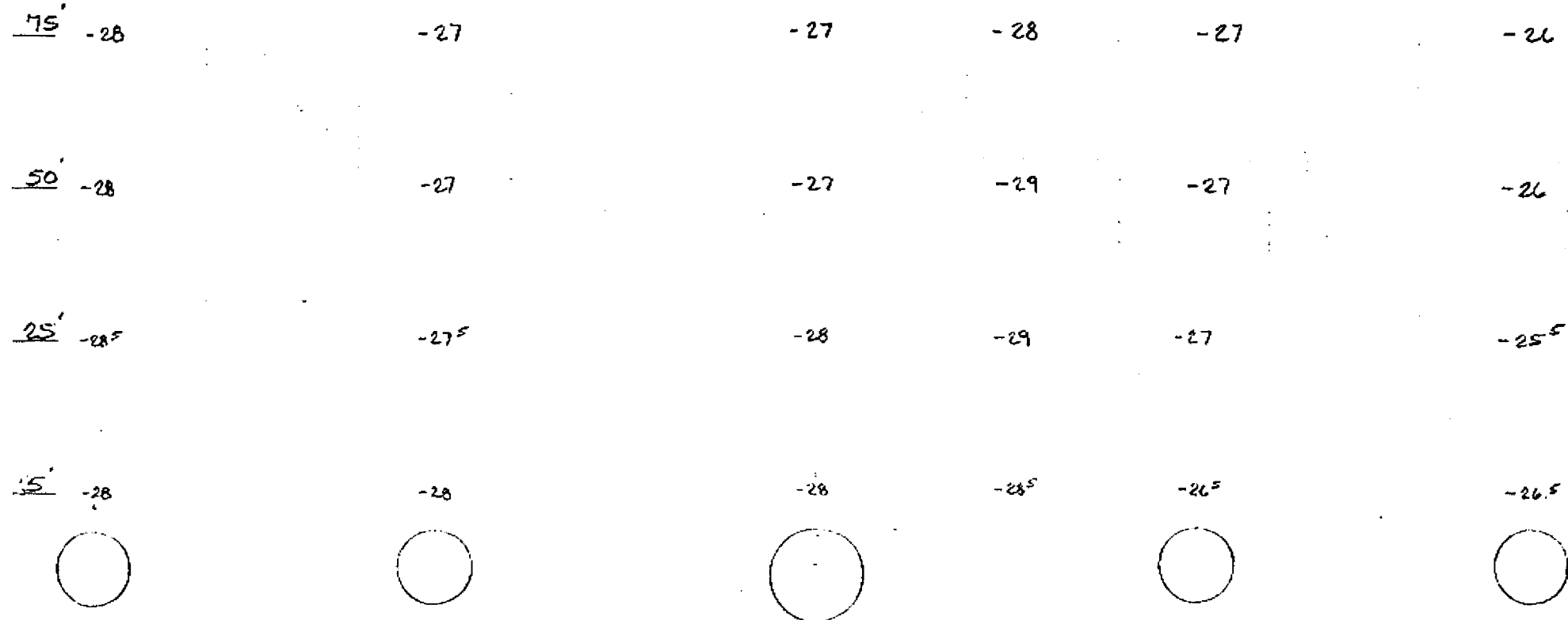
# ASHGROVE CEMENT DREDGE SOUNDINGS 9-14-93

SOUNDINGS PERFORMED  
UPON COMPLETION OF  
DREDGING 9-14-93.

ALL ELEVATIONS ARE  
COLUMBIA RIVER DATUM.

FLOW

TOTAL P.02



# **Sediment Data Report**

**Ash Grove Cement Company  
Willamette River  
Portland, Oregon**

September 19, 2005

*Prepared for:*  
Ash Grove Cement Company

*Prepared By:*  
Parsons Brinckerhoff

*in association with*  
Integral Consulting, Inc.



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PARSONS  
BRINCKERHOFF

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Ash Grove Cement Company  
Sediment Data Report  
September 19, 2004

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## 1. INTRODUCTION

Ash Grove Cement Company operates a lime plant located at 13939 N. Rivergate Blvd. in North Portland, Oregon. The Rivergate Lime Plant imports limestone at its dock and barge berth, which is located on the east shore of the Willamette River, River Mile 2.9, as shown in the vicinity map, Figure 1. Ash Grove Cement Company has submitted a permit application for maintenance dredging to maintain safe access and berthing conditions at the facility. Sediment characterization was conducted to support regulatory agency review regarding water quality during dredging as well as the newly exposed sediment surface after completion of dredging.

As shown in Figure 2, the proposed maintenance dredging is near the conveyor system and at the upstream and downstream ends of the berth. Dredging will be by clamshell to haul barge, with ultimate disposal at an approved upland site. The dredged material is expected to be Willamette River sands and silts in the downstream and upstream portions of the berth. The material to be dredged in the vicinity of the conveyor system was found to be limestone based on grab samples collected at three locations within the footprint of the conical mound of material. Ash Grove Cement Company has already implemented several Best Management Practices (BMPs) to eliminate to the extent practicable future loss of limestone. BMPs in place include operating procedures involving conveyor stoppage as well as equipment modifications, such as a new conveyor brake system and motor control synchronization, to eliminate spillage at transitions between conveyors.

Dredging at this time is anticipated to be less than 2,500 cy in accordance with the dredging permit application previously submitted to the U.S. Army Corps of Engineers. The maximum proposed dredge depth at this time will be -27 ft CRD, which includes a one foot overdepth allowance to account for uncertainty in dredging accuracy. Total estimated dredging volume (including one foot of allowable overdepth beyond the design depth of -26 ft CRD) is about 2,000 cubic yards (cy) based on June 1, 2004 and February 17, 2005 hydrographic survey data collected by Minister & Glaeser Surveying, Inc. Of this dredge volume, approximately 630 cy is located near the conveyor in the middle of the berth, 1,300 cy is located at the downstream end of the berth and 70 cy is at the upstream end of the berth. The deepest portion of the dredge cuts are approximately 10 feet at the downstream end of the berth and near the conveyor as shown in Figure 3. At the upstream end the deepest part of the dredge cut is approximately 3 feet.

This report documents the methods and results for sediment sampling at the barge berth conducted in June, 2005.

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## 2. SAMPLE COLLECTION AND PROCESSING

### 2.1 Field Operations and Equipment

Sediment sampling took place on June 1, 2005 between approximately 9:00 am and 1 pm. Core samples were collected at locations C1, C2A and C3 as shown in Figure 2. Coordinates of the sample locations, mudline elevations, etc. are shown in Table 1. Samples were collected to a depth of at least one foot below the maximum proposed dredging depth (or the maximum depth of refusal) as required in the Sampling and Analysis Plan (SAP) (Parsons Brinckerhoff, 2005).

Cores C1 and C3 were located within 13 ft and 9 ft of the proposed locations, respectively. The sample location for C2A was moved to the west of the proposed location since the presence of limestone prevented penetration of the vibra-corer at the proposed C2A location. The intent of the core sample at C2A was to document the post dredge sediment surface following removal of the mound of limestone. Coring within the footprint of the limestone was not possible. Therefore, the original location for C2A, which was over the mound footprint, was moved slightly beyond the toe of the mound to allow a core sample to be obtained.

#### 2.1.1 CORING VESSEL

Cores were collected using a vibracorer operated by Golder Associates, Inc. aboard the vessel *OR 166 TN* operated by Mr. John Vlastelicia. The *OR 166 TN* is a welded aluminum 29-foot-long by 10 ft wide research vessel with an inboard outdrive and a 275-horsepower engine. It is equipped with a hydraulically operated A-frame with a boom, and a 1,000-lb capacity hydraulic winch. The vessel drafts approximately 3 feet and can easily accommodate up to 12 foot core tubes.

#### 2.1.2 NAVIGATION AND POSITIONING

Station positioning was accomplished using a Differential Global Positioning System (DGPS). DGPS consists of a GPS receiver on the sampling vessel and a differential receiver located at a horizontal control point. At the control point, the GPS-derived position was compared with the known horizontal location, offsets or biases were calculated, and the correction factors were telemetered to the GPS receiver located on the sampling vessel. Positioning information such as range and bearing from the target sampling location were provided to guide the sampling platform's pilot to the desired location.

A positional fix was recorded when the corer impacted the mudline. Accuracies of  $\pm 3$  meters are achieved using DGPS. Vertical control was based on the USGS gage No. 14211820 in Columbia Slough approximately 2 miles north of the project site. Tide board measurements were recorded at Port of Portland's Terminal 4 before and after sediment sampling. Based on a comparison of the measurements at Terminal 4 and the Columbia Slough gage, the time series of river stages measured in Columbia Slough were corrected by a reduction of 0.3 feet. All

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depth measurements were corrected to Columbia River Datum (CRD). Horizontal coordinates were referenced to Oregon Coordinate System, North Zone, North American Datum 1983(91) in international feet.

### **2.1.3 CORE COLLECTION TECHNIQUES**

Samples were collected using a vibracorer. The vibracorer uses a hydraulic system that vibrates and drives a length of 4-inch outer diameter (O.D.) aluminum tubing into the sediment. Ten and 12 foot long core tubes were used and these were typically driven to full depth. A continuous sediment sample was retained in the tubing with the aid of a stainless steel core cutter/catcher. Sediment recoveries of approximately 70% to 80% were obtained corresponding to recovered core lengths of 7 feet 10 inches for the ten foot core tubes and 10 feet 10 inches for the 12 foot core tubes. Core liners were not used in the corer. A label identifying the station was securely attached to the outside of the casing and wrapped with transparent tape to prevent loss or damage of the label. The core ends were covered with aluminum foil, a protective cap, and duct tape to prevent leakage. The core sections were stored upright in a container chilled with ice to approximately 4°C. Empty tubing was removed to assure that each section was full of sediment. Full tubes limit disturbance during storage and transport.

As the end of the sampling day, cores were transported to the onshore sample processing facility at the Olympia office of Integral Consulting, Inc. for compositing and subsampling. Cores remained in the custody of field sampling personnel during transit between the vessel and the processing location.

### **2.1.4 DECONTAMINATION**

All sampling equipment that contacted sediment samples (i.e., core tubes, stainless steel bowls, utensils, and core catcher ) was decontaminated prior to use and between each core sample. The decontamination procedure consisted of the following sequential rinses:

- Rinse with tap water or water supplied by the sampling vessel
- Scrub with laboratory-grade detergent (i.e., Alconox) solution
- Tap water rinse
- Distilled water rinse
- Rinse with dilute (0.1 Normal) nitric acid
- Distilled water rinse
- Rinse with methanol

All decontaminated equipment was wrapped in aluminum foil with the dull side facing the equipment. All waste decontamination water was diluted with site water and discarded onsite.

New aluminum core tubes were scrubbed with Alconox, rinsed, and wrapped immediately in aluminum foil to reduce the chance of contamination. Sufficient decontaminated sampling tubes were available on-site to allow for uninterrupted operations.

Samplers wore disposable latex gloves during sample processing (i.e., core extrusion and splitting, compositing, and filling sample containers). The gloves were rinsed with distilled water before and after handling each sample to help minimize sample contamination from chemicals associated with latex gloves. Gloves were disposed of between composites to prevent cross contamination between each core.

### **2.1.5 FIELD LOG**

A field log was maintained during all field sampling activities. This log included the following:

- Names of field supervisor and person(s) collecting and logging in the sample
- Weather conditions
- Elevation of each boring station sampled relative to CRD. This was accomplished using a lead line to determine depth at the location and time each sample was collected and referencing this information to published river elevation data.
- Date and time of collection of each sediment bore sample
- The sample station number as shown in Table 1 and Figure 2, and individual designation numbers assigned for each individual core
- Length and depth intervals of each core and recovery for each sediment sample as measured from CRD
- Qualitative notation of apparent resistance of sediment column to coring
- Odor
- Any deviations from the approved sampling plan

### **2.2 Sample Compositing and Subsampling**

Core extrusion and sample processing were done at Integral's onshore sample processing facility in Olympia, Washington on June 2, 2005, one day following field collection. At the facility, cores were accessed by cutting off one side off the core tube. This produces a generally intact core segment for visual description of the sediments with depth.

Core and Sample Descriptions. A description of each core sample was recorded on Core Description and Sample Information forms. These forms include the following information:

- Sample recovery
- Physical soil description (i.e., soil type, density/consistency, color)
- Odor (e.g., hydrogen sulfide, petroleum)



- 
- Visual stratification and lenses
  - Vegetation
  - Debris
  - Evidence of biological activity (e.g., detritus, shells, tubes, bioturbation, live or dead organisms)
  - Presence of oil sheen
  - Other distinguishing characteristics or features

Compositing and Subsampling. Following discrete sample collection and sediment descriptions, samples were composited in accordance with the SAP as follows:

- The top 0.8 feet of sediment in core C2A was composited to characterize the post-dredge surface.
- The sediment lying between the mudline and the maximum depth of dredging for Cores C1 and C3 were composited vertically and across both cores. This composite was designated as C13-A and is used to assess sediment quality of the dredged material to be removed. As noted in the introduction, the material in the conical mound located at the conveyor (Figure 2) was shown to be crushed limestone approximately two to three inches in size. This was documented by collection of three grab samples. Although the sampler did not close during collection of two of the three samples (the limestone caught in the lip of the bucket), the bucket did close once revealing an extremely clean sample with only a trace of material smaller than the rock. Therefore, no further collection or assessment of this material was undertaken. Based on the field sampling, the material to be dredged at this location is assumed to consist of crushed limestone.
- For Cores C1 and C3 the sediment lying within one foot below the deepest proposed dredge depth was composited vertically. These samples were used to characterize the post dredge surface. The post-dredge surface samples from Cores C1, C2A and C3, designated as samples C1-Z, C2-Z and C3-Z in Table 1, were composited across the three cores and used to characterize the post-dredge surface sediment quality. This horizontally composited sample was designated as C123-Z and is used to assess sediment quality of the post-dredge surface.

Details on specific core retention dimensions and portions of the core used to create sample composites are shown in the Core Logs contained in Appendix A.

Sediment was collected from the entire length of the portion of the core representing the composite. Sediments were placed in a decontaminated stainless steel bowl and thoroughly mixed to a uniform color and texture. The sediments were stirred periodically during collection of individual samples to ensure that the mixture remained homogenous. Pre-labeled jars for chemical and conventional parameter analyses were filled with the homogenized sediment. In

total, approximately 32 oz. of homogenized sediment were collected for each composite sample to provide adequate volume for all analyses. Aliquots of each composite sample were placed in appropriate containers obtained from the chemical laboratory. Each sample container was clearly labeled with the project name, sample/composite identification, type of analysis to be performed, date and time, and initials of person(s) preparing the sample. Samples were stored on ice or refrigerated at approximately 4°C until analysis.

## 2.3 Sample Transport

When compositing and subsampling was completed, sediment sample containers were transported to the analytical laboratory. The following specific sample shipping and delivery procedures were used:

- Individual sample containers were placed in sealed plastic bags, packed to prevent breakage, and transported on ice in a sealed cooler.
- Ice was contained in a separate plastic bag in the cooler.
- The shipping containers were clearly labeled with sufficient information (name of project, time and date container was sealed, person sealing the container and consultant's office name and address) to enable positive identification.
- A sealed envelope containing chain-of-custody forms was enclosed in a plastic bag and taped to the inside lid of the cooler.
- Signed and dated chain-of-custody seals were placed in the cooler prior to shipping.
- The cooler containing sediment samples for analysis was delivered to the laboratory within 2 hours of being sealed.
- Samples were packaged and shipped in accordance with U.S. Department of Transportation regulations as specified in 49 CFR 173.6 and 49 CFR 173.24.

## 2.4 Chain-of-Custody Procedures

Chain-of-custody procedures tracked delivery of samples from the vessel to the processing facility and from the processing facility to the analytical laboratory. Specific procedures were as follows:

- Information tracked by the chain-of-custody records included core segment and sample identification, date and time of sample collection and receipt, analyses and analytical methods required, and signatures of each person in custody of the samples.
- The coolers were clearly labeled with sufficient information (name of project, time and date container was sealed, person sealing the cooler and company name and address) to enable positive identification.
- The envelope containing signed and dated chain-of-custody forms was enclosed in a plastic bag and taped to the inside lid of the cooler prior to shipping.

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Upon transfer of sample possession to the analytical laboratory, the chain-of-custody form was signed by the person transferring custody of the sample container. Upon receipt of samples at the laboratory, the shipping container was opened and the condition of the samples was recorded by the receiver. The laboratory maintained chain-of-custody internally to track handling and final disposition of all samples.

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### 3. LABORATORY PHYSICAL AND CHEMICAL SEDIMENT ANALYSIS

The laboratory report presenting the methods, results, and QC analyses are provided in Appendix B. Integral performed a data quality evaluation (QA1) for DMEF chemicals of concern. This section details the outcome of the data quality review, summarizes the sediment chemical data, and compares the chemical data to DMEF chemical guidelines.

#### 3.1 Data Quality Summary

Integral Consulting, Inc. performed the following quality evaluation for DMEF chemicals of concern.

A data quality evaluation was performed in accordance with Puget Sound Estuary Program (PSEP) guidance (PSEP 1986) and the Dredged Material Management Program (DMMP's) Abbreviated Data Quality Evaluation (QA1) for Dredged Material Disposal Projects (PTI 1989) with revisions (PSDDA 1991). Results of this evaluation are reported on the attached worksheets in Appendix C. All data are determined to be acceptable. Holding times, detection limits and blank, reference material, analytical replicate analyses, and matrix spike and surrogate recoveries are within DMMP (PSDDA 1991) recommended warning limits or laboratory control limits with the following notes and exceptions:

Semivolatile Organics. The laboratory noted two problems associated with the semivolatile organics analyses. First, Method Reporting Limits (MRLs) for sample C13-A were elevated due to the laboratory's need to dilute the sample. Laboratories dilute samples when significant matrix interferences occur. Interferences result from the presence of multiple chemicals at elevated concentrations that mask the characteristic peaks displayed in chromatograms for other chemicals at the time of analysis. Using standard laboratory methods, some of the peaks interfering with the quantitation process can be eliminated (i.e., use of larger sample sizes, smaller extract volumes, and sample cleanup methods). If matrix interferences continue to impair quantification, the remaining peaks may be resolved by diluting the sample. Unfortunately, the process of diluting the sample also increases detection limits for all analytes quantified using that method. A dilution of three increases the detection limit by a factor of three. Samples may only be diluted up to 4 or 5 times before the detection limits exceed DMMP criteria. For C13-A, the resulting detection limits for benzyl alcohol, 2,4-dimethylphenol, benzoic acid, n-nitrosodiphenylamine, and hexachlorobenzene exceeded DMMP screening levels (SLs). Second, the primary evaluation criterion for benzoic acid, 2,3-dinitrophenol, and pentachlorophenol was exceeded in the Initial Calibration (ICAL CAL4553). In accordance with the method, the lab used an alternative means for evaluating performance by calculating the mean relative standard deviation of all analytes in the calibration. This alternative method met criteria.

Two other semi-volatile exceptions were noted during this review. Matrix spike recoveries for 1,4-dichlorobenzene (MS-47%, MSD-46%) were slightly less than the recommended 50% limit.

Results of other QA information (lab control sample, lab replicates, surrogate recoveries) were well within limits and no data qualification was necessary. Phenol was detected in the laboratory's method blank at levels greater than the method detection limit (MDL) but lower than the MRL. No data qualification was deemed necessary given the low concentration (3.1J µg/kg) detected in the blank.

No other problems were noted as part of this review.

Pesticides/PCBs. The laboratory noted two issues associated with the pesticides analyses. Like the SVOCs, MRLs were elevated for several pesticides due to matrix interferences and were flagged by the lab using the "i" qualifier. Also, sample confirmation comparison criteria (40% difference) for 4,4-DDE and 4,4'-DDT was exceeded in sample C13-A. For 4,4'-DDE, the higher of the two values was selected because no peak anomalies were noted. For 4,4'-DDT, the lower of the two values was reported because the alternate column showed matrix interferences.

For PCBs, no analytical problems were noted. However, the laboratory pointed out that due to the presence of Aroclors 1248, 1254, and 1260 in both sediment samples, the correct identification and quantitation of individual Aroclors can be subjective. Extra care was taken by the lab to select the appropriate analytical peaks associated with each sample. The lab acknowledged that the potential exists for a high bias in this case because more than one Aroclor can contribute to common peaks or the peaks themselves may be difficult to resolve. Despite these difficulties, all QA information indicated that the PCBs analyses resulted in high quality data.

No other problems were noted as part of this review.

Metals. The laboratory noted that antimony recovery in the matrix spike was below the PSDDA action level of 75 – 125%. Low spike recoveries of antimony are common in analytical samples. The cause of the low recovery has been reported to be due to the formation of Sb<sub>2</sub>O<sub>5</sub> in the presence of nitric acid. This antimony oxide compound is very adsorptive and is lost on silicate surfaces (i.e., sand, soil and glass beakers). The addition of HCl to the digestion, as required by method 3050 for ICP analysis, converts some of this adsorptive oxide to the SbCl<sub>6</sub> anion, which does not adsorb on undigested siliceous materials. The laboratory did not reanalyze samples for antimony because this is a normal occurrence for this analyte using the required preparation method. The SRM recoveries were acceptable, and results were not qualified.

Two other metals exceptions were noted during this review. The relative percent difference (RPD) measured between replicate mercury concentrations (26%) exceeded the DMMP's recommended limit of 20% RPD but was less than the laboratory's control limit of 30% RPD. The SRM and matrix spike recoveries for mercury, however, were acceptable and no

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qualification was necessary. Metals (antimony, cadmium, silver) were detected in the laboratory's method blank at levels greater than the method detection limit (MDL) but lower than the MRL. No data qualification was deemed necessary given the low concentrations detected in the blank.

No other problems were noted as part of this review.

Total Organic Carbon. No QC or analytical concerns.

Wet Chemistry (Total Solids, Total Volatile Solids). No QC or analytical concerns.

Grainsize. No QC or analytical concerns.

### 3.2 Laboratory Results

A summary of the sediment physical and chemical results and a comparison against DMEF screening levels is presented in Appendix D. The sediment sample (C13-A) collected from the overlying material to be dredged was composed of 61% fines with the remainder being sand and a trace (<1%) of gravel. The C13-A sample was diluted as noted above and all the High Polynuclear Aromatic Hydrocarbons (HPAHs) including total HPAH, except Benzofluoranthenes exceeded DMEF SLs. The Semivolatiles noted in Section 3.1 had MRLs exceeding DMEF SLs due to the need for sample dilution. For all samples with MRLs exceeding DMEF SLs, the results were non-detects. Other than the HPAHs, the only other two analytes with detects above DMEF SLs were Total DDT and Total PCBs. Both of these detected analytes exceeded the DMEF SL concentrations by less than a factor of two. As noted in the introduction, this material is proposed to be dredged using a clamshell bucket and disposed at an approved upland facility.

The sediment sample corresponding to the post-dredge surface contained approximately 37% fines with the remainder being sand with a trace of gravel. The chemical concentrations for all analytes in this sample were less than DMEF SLs. According to the DMEF guidance, this sediment would be suitable for in-water placement without further testing.

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## 4. CONCLUSIONS

Sediments lying below the proposed dredge prism consisted of about 2/3 sand and 1/3 fines with all chemicals of concern passing the DMEF SLs. Therefore, these sediments would be acceptable for in-water placement according to DMEF guidance.

Sediments to be dredged in the vicinity of Stations C1 and C3 were shown to consist of approximately 2/3 fines and 1/3 sand. These sediments exhibited:

- detected concentration exceedances of the DMEF SL levels for HPAHs, Total DDT and Total PCBs;
- MRLs for some semivolatiles in excess of DMEF SLs due to the need for sample dilution;
- an MRL for Benzoic Acid exceeding the DMEF ML due to the need for sample dilution; and
- no detected concentration exceedances of DMEF SLs for semivolatiles (other than the PAHs).

Material to be dredged in the vicinity of the conveyor was shown to be two to three inch crushed limestone.

All sediments are proposed to be dredged using a clamshell bucket with disposal to an approved upland facility.

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## 5. REFERENCES

Parsons Brinckerhoff, 2005. Sampling and Analysis Plan, Ash Grove Cement Company, Willamette River, Portland, Oregon. Prepared for Ash Grove Cement Company in association with Integral Consulting, Inc.

Puget Sound Estuary Program (PSEP). 1986. Recommended protocols for measuring selected environmental variables in Puget Sound. Final Report. TC-3991-04. Prepared for EPA, Region 10, Seattle, WA.

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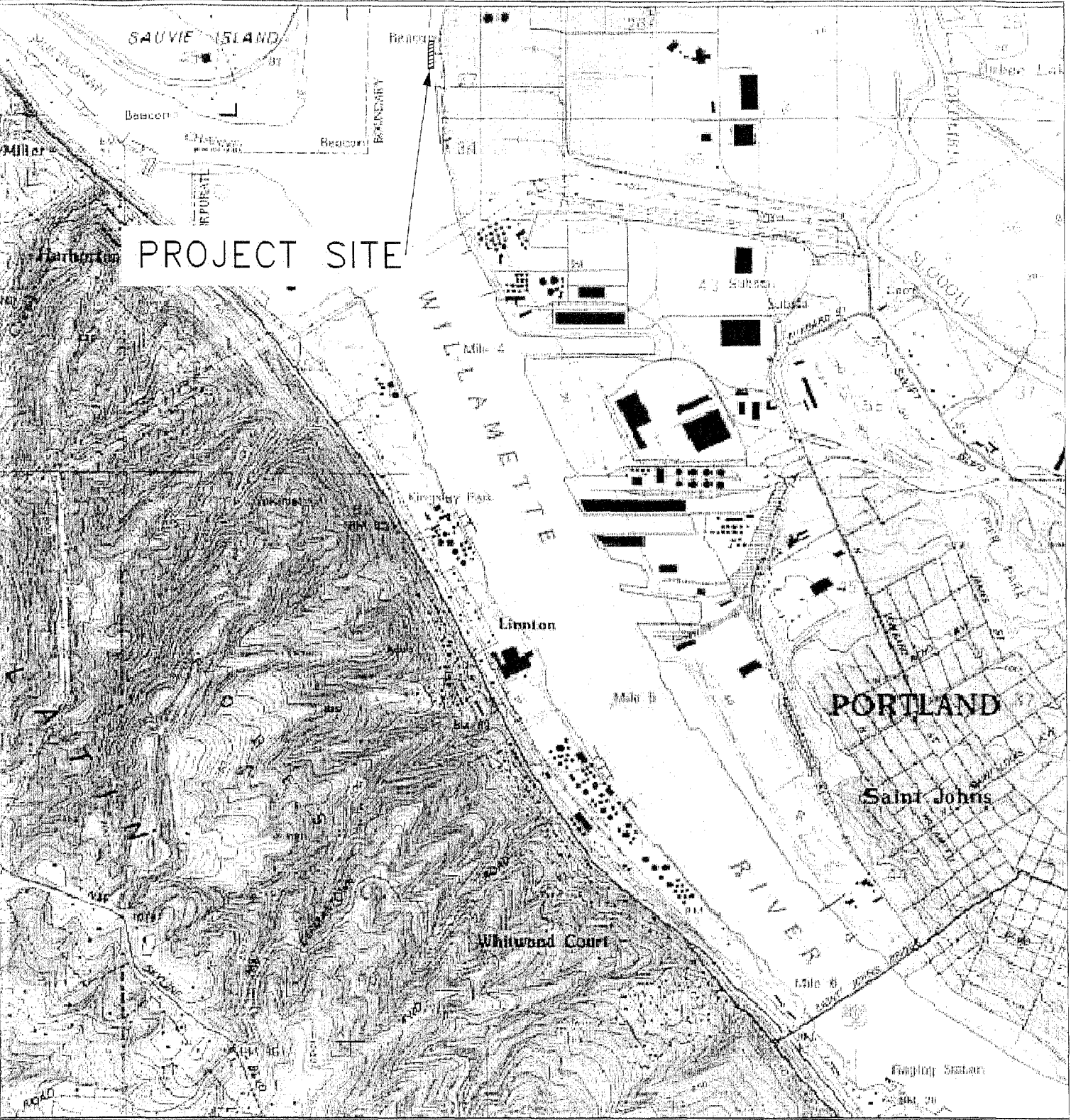
PTI Environmental Services, Inc. (PTI). 1989. PSDDA Abbreviated Data Quality Evaluation for Dredged Material Disposal Projects. Prepared for the Washington State Department of Ecology, PTI Environmental Services, Inc. Bellevue, WA.

U.S. Army Corps of Engineers (USACE), 1998. Dredged Material Evaluation Framework, Lower Columbia River Management Area, November.

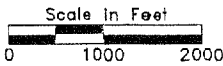


**Table 1 Sediment core information**

<b>Parameter</b>	<b>Core C1</b>	<b>Core C2A</b>	<b>Core C3</b>
Northing (NAD83, Lambert Coordinates, Oregon North Zone)	721,638 ft	721,527 ft	721,322 ft
Easting (NAD83, Lambert Coordinates, Oregon, North Zone)	7,616,792 ft	7,616,773 ft	7,616,794 ft
Design Dredge Depth (ft) CRD	-26	-26	-26
Maximum Dredge Depth (ft) CRD	-27	-27	-27
Leadline Measurement of Water Depth (ft)	22.0	31.5	29.3
River Stage at Time of Coring (ft) CRD	4.4	4.3	4.6
Existing Mudline Depth (ft) CRD	-17.6	-27.2	-24.7
Retained Sediment Depth (ft)	13.2	10.0	10.4
Maximum Depth of Retained Sediment (ft) CRD	-30.8	-37.2	-35.1
Sediment Sample Designation	C1-A (dredge material) C1-Z (post-dredge surface)	C2-Z (post-dredge surface)	C3-A (dredge material) C3-Z (post-dredge surface)



NOTE 1. LOCATION MAP OBTAINED FROM US GEOLOGICAL SURVEY  
QUAD SHEET FOR LINNTON, OR



PURPOSE: MAINTAIN NAVIGATION ACCESS  
AND BERTH FOR BARGES

VERTICAL DATUM: COLUMBIA RIVER DATUM  
(CRD), CRD IS 1.6' ABOVE NGVD  
AT WILLAMETTE RIVER MILE 2.9

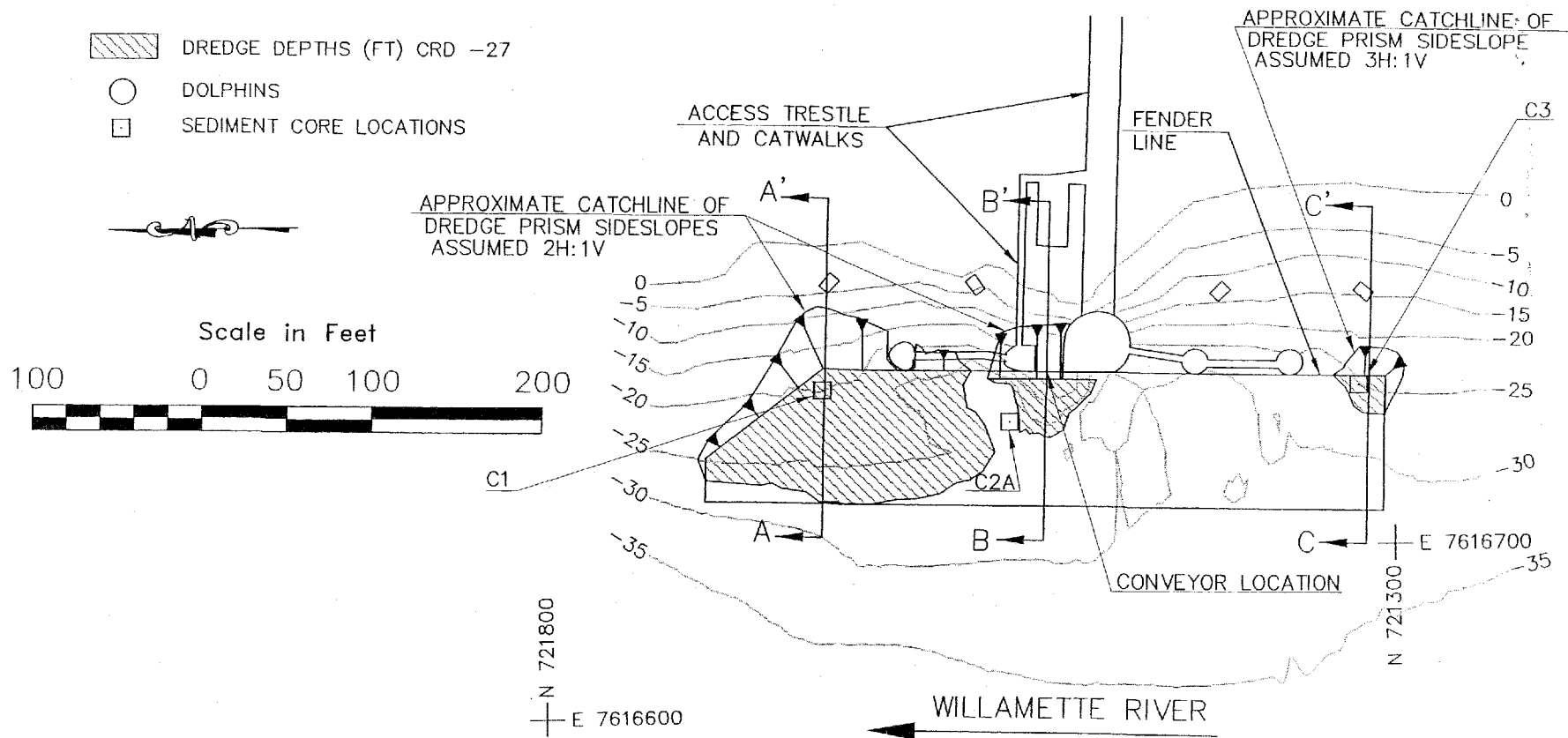
ADJACENT PROPERTY OWNERS:  
1. SIMPLOT  
2. GEORGIA PACIFIC

LATITUDE: 45° 37' 19" N  
LONGITUDE: 122° 47' 00" W

FIGURE 1. VICINITY MAP

PROPOSED MAINTENANCE DREDGING  
AT ASH GROVE CEMENT COMPANY

IN: WILLAMETTE RIVER  
AT: RIVER MILE 2.9  
COUNTY OF: MULTNOMAH



PURPOSE: MAINTAIN NAVIGATION ACCESS AND BERTH FOR BARGES

VERTICAL DATUM: COLUMBIA RIVER DATUM (CRD), CRD IS 1.6' ABOVE NGVD AT WILLAMETTE RIVER MILE 2.9

ADJACENT PROPERTY OWNERS:

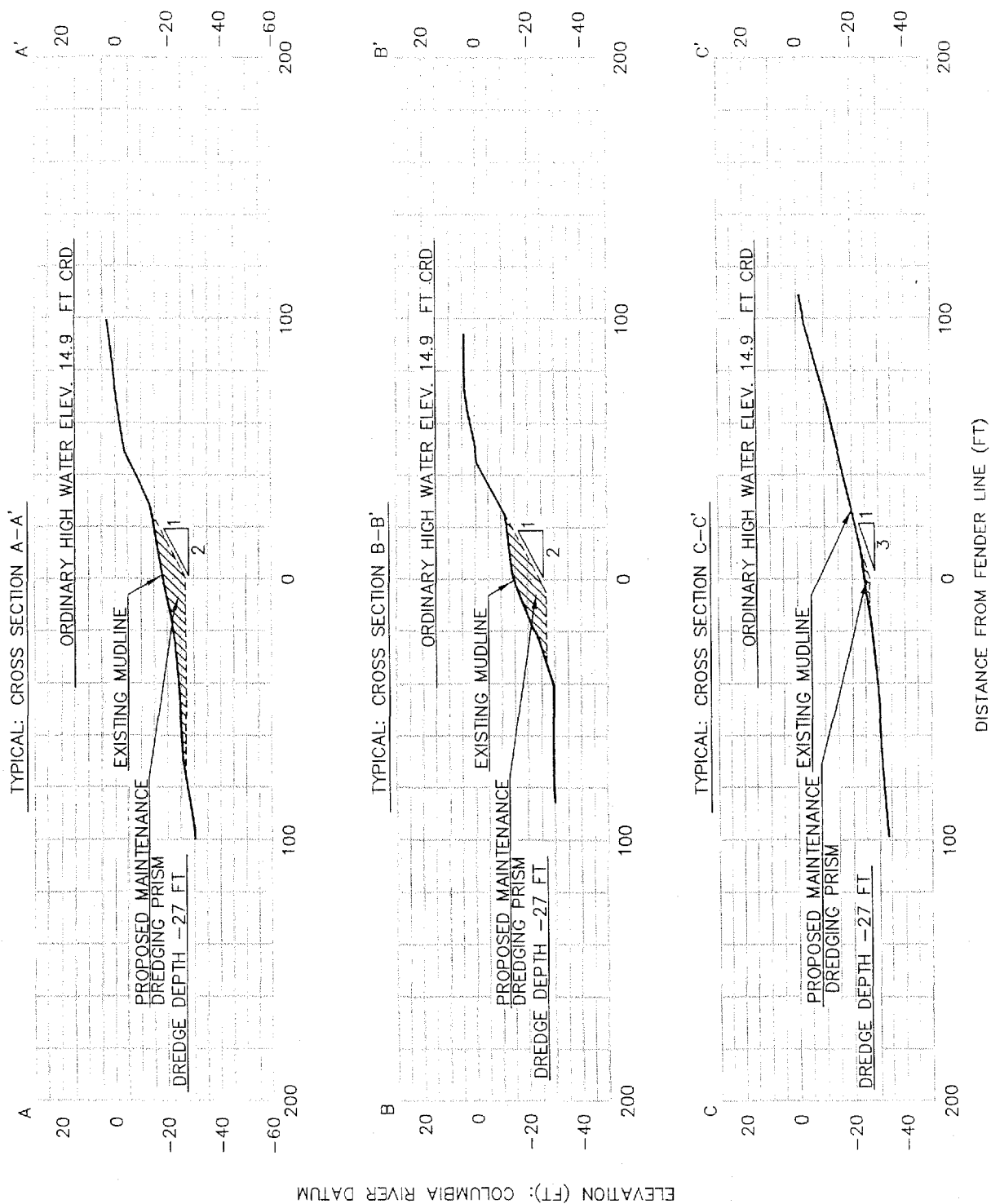
1. SIMPLOT
2. GEORGIA PACIFIC

LATITUDE: 45° 37' 19" N  
LONGITUDE: 122° 47' 00" W

FIGURE 2. PLAN VIEW OF PROPOSED DREDGING AND SAMPLE LOCATIONS

PROPOSED MAINTENANCE DREDGING AT ASH GROVE CEMENT COMPANY

IN: WILLAMETTE RIVER  
AT: RIVER MILE 2.9  
COUNTY OF: MULTNOMAH



PURPOSE: MAINTAIN NAVIGATION ACCESS AND BERTH FOR BARGES

VERTICAL DATUM: COLUMBIA RIVER DATUM (CRD), CRD IS 1.6' ABOVE NGVD AT WILLAMETTE RIVER MILE 2.9

ADJACENT PROPERTY OWNERS:

1. SIMPLOT
2. GEORGIA PACIFIC

LATITUDE: 45° 37' 19" N  
LONGITUDE: 122° 47' 00" W

SCALE: AS SHOWN

FIGURE 3. TYPICAL CROSS SECTIONS

PROPOSED MAINTENANCE DREDGING AT ASH GROVE CEMENT COMPANY

IN: WILLAMETTE RIVER  
AT: RIVER MILE 2.9  
COUNTY OF: MULTNOMAH

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## APPENDIX A

### CORE INFORMATION FORMS AND LOGS

"Outdoor writing products for outdoor writing people."



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"Rite in the Rain" - A unique All-Weather Writing paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather.

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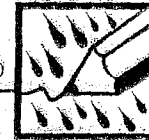
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GOLDER

4 5/8" x 7" - 48 Numbered Pages

6/1/05	ASH GROVE DUMP	J. Moore
0800:	MEET AT CATHEDRAL PARK	
	LOOK UP FOR DEEPER CHARACTERIZATION	
	CORING	
	PERSONNEL: JAMES RAMSEY - PARSONS	
	JOHN VLASTELICA - PILOT	
	DAVID HUNTERFORD - GOLDSER	
	JOSE MOORE - INTERVIEW	
0830:	MOB TO ASH GROVE	
0850:	ARRIVE AT SITE (JUST N OF 74)	
	RIVER GULCH 4-6 CHS	
0900:	SET UP MAPPING FOR MAPPING	
	SURFACE GRAB OF TANKS FROM	
	LIMESTONE CONJUNCTION BEET	
	ALSO USE CAMERA FOR OBSERVATIONS	
	OF SURFACE PRIOR TO SAMPLING	
	DEPTH TO TANKS - 23 FT	
0930:	JUST LESTURE < 4" A-LEVEL	
	LOOKS PHOTO ① - SAMPLE ①	
	X - 7.616.783.4	
	Y - 721.494.3	
0935:	MOB TO NORTH SIDE OF TANKS	
	TO TAKE CORE	
	WATER DEPTHS - 29-5 FT	

6/1/05	ASH GROVE	J. Moore
	X: 721.517.4	
	Y: 7.616.779.3	
0950:	GRAB POWER (UNUSUAL) TO CHECK	
	SURFACE - JUST LESTURE CORE	
	CLAVEN	
1000:	POINT #7 ON GPS - TAKE	
	POWER SANDS - MOUND N. ALONG	
	FROM TANKS	
	- SET UP 10 FOOT CORE TUBE	
	NEED AT LEAST 4 FT RECOVERY	
	TO REACH < 2 FT 2 RECOVER	
	SAMPLES. SAMPLE WHEN BE	
	C2A.	
1025:	DEPTH 10 FT CORE C2A.	
1035:	70% Recovery - i.e. not as	
	CORE AFTER IS SMALLER THAN	
	CORE 1B.	
	- leave to stand prior to cutting	
1050:	MOB TO STATION C1	
	PREPARE CORE TUBE - 12 FT.	
1110:	22.0 FT water depth	
1121:	POINT B ON GPS - BEGIN CORING	
	C1	
1130:	OVERSPORE BY 1.2 FT - 50%	

6/1/05	ASH GROVE	J. MOORE
	Recovery is under - cap and allow to stand	
1140	MOD TO C3	
1150	WATER DEPTH 29.3 FT.	
1200	BELOW CORE, POINT 10 ON GPS.	
1205	CORE RECOVERY 60%, ONLY Penetrated to 10 ft in 12 ft core, and about 6-7 ft of the 10 ft is sediment.	
1300	TANK WITH PARSONS CURT CHEN DUCKAR.	
1300	MOD TO CATHESRA PARK FOR CORE CUTTING	
1320	RUBRA CANCE AT 74 @ 5.0 FT CTS.	
1330	PENDING CORE.	
1420	CORE PROCESSING FINISHED - SEE CORE LOGS. MOD TO CATHESRA PARK	
1435	BEGIN UNLOADING CORES AT CATHESRA PARK.	
1515	MOD TO MEET GENE.	
	(JH) 6/1/05	



# SEDIMENT CORE LOG

PROJECT: Ash Grove Cement DM Char.

Core ID: C1 pg 1 of 1

Collected:		Processed:	
Date: 6/1/05	Drive Length: 13.2	Date: 6/2/05	
Time: 1130	Tide Level (CRD):	Time: 1230	
Recovery Length: 10'10"	Mudline Depth: 22.0	Core Length: 313 cm (123")	
Recovery Efficiency: ~80%	Vessel:	Location: INTECCAL-OLYMPIA	
Crew: Golder/John V. ; Joss Moore (Integral)		Crew: S.P. TREGEAR, I. STAPKOFF	

Depth in Core (cm)	Lithologic Description: (Grainsize, color, density/consistency, odor, organics, debris)	Grain Size (%)			Photo ID	PID (ppm)	Sample ID
		G	S	SI/CI			
0-82	SILTY SAND (ML). SAND IS FINE - V.FINE, TR <del>TR</del> <sup>COARSE</sup> GRAINED. PRECIPITATES (P) (WHITE). SAND IS DK GRAYISH BROWN. INTERBEDDED SILTY SAND + SANDY SILT. DENSE. SMALL (40.5 cm) SHEEN LENSES. MILD SULFIDE ODOR. TR ROOTLETS + SMALL WOODY ORGANICS. TR MED ANNUAL SAND GRAINS IN LENS @ 77-82 cm.	65	35			N/A	C1-A (0-6'9") (0-205.5 cm)
82-123	SILT (ML) TR V.FINE SAND, STIFF MED. GRAYISH BROWN. TR LIGHT SHEEN, V.MILD PET. ODOR. <sup>LOW</sup> MED PLASTICITY.			100			
123-109	SANDY SILT (ML). SILT W/ TR V.FINE SAND INTERBEDDED W/ SAND (FINE, DK GRAY) IN LENSES <sup>TR</sup> BEDS <sup>1/2</sup> cm THICK. LOW PLASTICITY. MILD PET. ODOR (OILY), LIGHT SHEEN. TR WOODY ORGANICS.	40	60				
109-244	SAND W/ SILT (SP-SM). SAND IS FINE, POORLY GRADED, DK BROWNISH GRAY. DENSE. SILT OCCURS IN BEDS + LENSES (12 mm to 0.5 cm thick). SILT IS DK GRAYISH BROWN. MILD SULFUR ODOR. TRACE SHEEN IN LENSES TO 179 cm. TR MILCA AND RED GRAINS IN SAND.	90	10				C1-Z (6'9"-7'7") (205.5 cm - 231 cm)
244-313*	SAME AS ABOVE; SILT BED FROM 266-283 cm; LOW-MED PLAST. MILD ODOR. (SM.)	70	30				
* BOTTOM 10 cm IN CORE disturbed by removal of core catcher (by catcher teeth). Field measured recovered length includes ~10 cm of core catcher that was EMPTY upon removal.							

Core segment breaks at (cm): 0-123 ; 123-244 ; 244-313

SH

PROJECT: ASH-GROVE DAM  
 STATION: C1  
 REPLICATE: -

Field Log by: J. Moore	Processing by:	Coring by: GOLDBER / JOHN.V.
Tide Level from MLLW: 4.6	Date: 6/1/05	Total Drive Length: 13.2
Depth to Mudline: 22.0	Time: 1130	Recovered Length: 10'10"
Mudline Elev.:		Recovery Efficiency: ~80%

Note: All elevations, depths, and distances in feet.

## Core Description - Core Tube Lengths

## In-Situ Summary Log

Tube Length	Sample No.	Visual Description	Photo Interval	Interpreted Summary	Sample No.	Acquisition Notes
1				1		
2				2		
3		↑ H <sub>2</sub> O + Floc' lumps		3		
4		- SILT, BROWN, wood chips		4	#1	EASY CORING
5		NO Sheen, NO odor		5		
6				6		
7		- silt, gray, med plasticity, little fine sand, NO odor/sheen		7		
8				8	#2	
9				9		
10				10		
11		- SAND, GRAY, fine to med grain, some silt, NO odor/sheen		11		
12				12	#3	
13		SILT, GRAY, LITTLE fine grain		13		
14		Sand, NO odor, NO sheen	TD 13.2'	14		CATCHER 1'-2" OVER DRIVE
15		Catcher empty.		15		
16				16		
17				17		
18				18		

## Core Tube Field Cut Information

Sample No.	Tube Length Interval	Segment Length

## Sample Test Information

Sample No./Tests	In-Situ Depth Int.

Notes:

# SEDIMENT CORE LOG

PROJECT: Ash Grove Cement DM Char.

Core ID: C2a pg 1 of 1

Collected:				Processed:			
Date: 6/1/05	Drive Length: 10'	Date: 6/2/05					
Time: 1035	Tide Level (CRD):	Time: 1000					
Recovery Length: 7'10"	Mudline Depth: 31.5'	Core Length: 235cm (92.5")					
Recovery Efficiency: 70%	Vessel:	Location: INTEGRAL OLYMPIA					
Crew: Golder/John V.; Joss Moore (INTEGRAL)		Crew: S. Fitzgerald; I Stupakoff					

Depth in Core (cm)	Lithologic Description: (Grainsize, color, density/consistency, odor, organics, debris)	Grain Size (%)			Photo ID	PID (ppm)	Sample ID
		G	S	SI/CI			
0-7	SILTY SAND (SM). FINE, MED GRAY. Very LOOSE, SATURATED 100% WOOD CHIPS + TWIGS. LIGHT SHEEN. SULF. DE ODOR. Polychaete observed. <del>Red fiber observed upon sampling</del>		80	20		NA	C2-Z (0-7.5") (0-19cm)
7-31	SILTY SAND (SM). FINE, TR FINE ANG. GRAVEL. MED GRAY, TR ORGANICS (ROOTLETS, BARK DEBRIS). NO ODOR. INCREASING SILT IN LENSES. BELOW 20 CM. NO SHEEN. DENSE. Red fiber observed upon sampling	45	80	20			
31-55	SANDY GRAVEL (GW) SAND FINE; GRAVEL (80% FINE, 20% COARSE) ANGULAR. DK GRAY. NO ODOR. NO SHEEN. ABSTRACT BASAL CONTACT. WELL GRADED GRAVEL W/ SAND. DENSE	70	30	0			
55-83	SANDY SILT (ML) MED GRAYISH BROWN. SAND FREEDOM FINE, (TR MED) GRAVEL (60% FINE 40% COARSE) ANGULAR. TRACE ORGANICS. SAND OCCURS IN LENSES + BEDS UP TO 1 CM THICK. MILD SULFUR ODOR, NO SHEEN. LOW PLASTICITY. STIFF	10	80	60			
83-119	SILT, TR FINE SAND (ML) MED GRAYISH BROWN, MED PLASTICITY. LIGHT SHEEN IN SMALL LENSES (0.5 cm). LIGHT PET ODOR. TR ORGANIC LENSES 0.5 cm-THICK LENS OF CLAY @ 100cm STIFF.			100			
119-211	SILT, TR FINE SAND (ML) AS ABOVE MED PLAST MED GRAYISH BROWN. LENSES + BEDS (1-4 cm thick) OF FINE SAND (DK GRAY) W/ LIGHT SHEEN. LIGHT PET ODOR. STIFF.	25	75				
119-235	SILTY SAND (SM). SAND IS FINE, DK GRAY. OCCURS IN LAMINAE + BEDS (2mm-1cm thick) ABOVE 223cm, more homogeneous below. SILT + SILT/CLAY IN LENSES + BEDS ABOVE 223 cm (interbedded). LIGHT SHEEN. LIGHT PET ODOR. DENSE	65	35				

Core segment breaks at (cm): 0-119; 119-235 cm

LIMESTONE GRAVEL MATERIAL @ SURFACE ON SITE. TOOK PHOTO OF THIS

SHF

PROJECT: *ASH GROVE*  
 STATION: *C29*  
 REPLICATE: *—*

Field Log by: <i>J. Moore</i>	Processing by:	Coring by: <i>GOLDER / JANN.V.</i>
Tide Level from MLLW: <i>4.6</i>	Date: <i>6.2.05</i>	Total Drive Length: <i>10'</i>
Depth to Mudline: <i>31.5</i>	Time: <i>1035</i>	Recovered Length: <i>7' 10"</i>
Mudline Elev.:		Recovery Efficiency: <i>70%</i>

Note: All elevations, depths, and distances in feet.

## Core Description - Core Tube Lengths

## In-Situ Summary Log

Tube Length	Sample No.	Visual Description	Photo Interval	Interpreted Summary	Sample No.	Acquisition Notes
1		<i>H<sub>2</sub>O + Floc' larger</i>		1		
2				2		
3		<i>Brown, Fine Floc' silt</i>		3		
4		<i>with fine sand, no odor</i>		4	<i>#1</i>	
5		<i>no sheen</i>		5	<i>4'</i>	
6				6		
7		<i>SILT/CLAY - GRAY TO</i>		7		
8		<i>DK BROWN</i>		8		
9		<i>HIGH PLASTICITY</i>		9	<i>#2</i>	
10		<i>NO ODOR / SHEEN</i>		10	<i>3' 10"</i>	
11				11	<i>TD.</i>	
12				12		
13				13		
14				14		
15				15		
16				16		
17				17		
18				18		

## Core Tube Field Cut Information

Sample No.	Tube Length Interval	Segment Length

## Sample Test Information

Sample No./Tests	In-Situ Depth Int.

Notes:

# SEDIMENT CORE LOG

PROJECT: Ash Grove Cement DM Char.

Core ID: C3 pg 1 of 1

Collected:				Processed:			
Date: <u>6/1/05</u>	Drive Length: <u>10.4'</u>	Date: <u>6/2/05</u>					
Time: <u>1205</u>	Tide Level (CRD):	Time: <u>1355</u>					
Recovery Length: <u>7'10"</u>	Mudline Depth: <u>29.3'</u>	Core Length: <u>249 cm (9'7 5/8")</u>					
Recovery Efficiency: <u>70%</u>	Vessel:	Location: <u>INTERNAL-DUMMIA</u>					
Crew: <u>GOLDER / John V. ; Jess Moore (Integral)</u>		Crew: <u>S. FITZGERALD; J. STURGEON</u>					

Depth in Core (cm)	Lithologic Description: (Grainsize, color, density/consistency, odor, organics, debris)	Grain Size (%)			Photo ID	PID (ppm)	Sample ID
		G	S	Si/Cl			
0-122	SILT (ML) TR FINE SAND, W/ TRACE BED OF FINE SAND @ 18-20cm (BLACK). SILT IS MED GRAYISH BROWN, TR SHEEN FLORETS MILD PET. ODOR. STIFF W/ TR V. THIN (<1mm) LENSES OF LIGHT GRAY MATERIAL betw 71-77cm IN SILT. TRACE ROOTLETS + WOOD DEBRIS. TR ANGULAR GRAVEL (2") @ ~23cm, NOTED UPON SAMPLING. L-M PLASTICITY	45	45	100		N/A	C3-A (0-26") (0-76cm)
122-202	SILT (ML), FEW SAND LENSES + BEDS (~1-5mm thick). SAND IS FINE, DK GRAY. SILT IS STIFF DK GRAYISH BROWN. TR FLORETS OF SHEEN. MED PLASTICITY (WET). LARGE WOOD CHUNK @ 174cm. TRACE ROOTLETS. MILD PET. ODOR		10	90			
202-225	SILTY SAND (SM), FINE, DK GRAY. HEAVY SHEEN, MOD PET. ODOR IN BOTTOM 16cm (BELOW 213cm). BOTTOM 14cm DISTURBED BY REMOVAL OF CORE CATCHER. SAND IS PERKY, W/ TR WOOD FRAGMENTS.	85	15				C3-Z (2'6" - 3'3") (76 - 99cm)
224-248	CATCHER (ADDITIONAL 19cm) CONTAINS SILTY FINE SAND W/ WOOD CHUNKS, HEAVY SHEEN <del>AT TOP</del> <del>OR FINE SAND LENSES</del> MOD. ODOR (PET). SILT @ BOTTOM OF CATCHER, W/ FREE PRODUCT LENSES @ BOTTOM						

Core segment breaks at (cm): 0-122 cm; 122-249

PROJECT: *ASH RESUE*  
 STATION: *C3*  
 REPLICATE:

Field Log by: <i>S. MORE</i>	Processing by:	Coring by: <i>GOLDER (JOHN V.)</i>
Tide Level from MLLW: <i>4.6</i>	Date: <i>6/1/08</i>	Total Drive Length: <i>10.4'</i>
Depth to Mudline: <i>29.3</i>	Time: <i>1205</i>	Recovered Length: <i>7'10"</i>
Mudline Elev.:		Recovery Efficiency: <i>70%</i>

Note: All elevations, depths, and distances in feet.

## Core Description - Core Tube Lengths

## In-Situ Summary Log

Tube Length	Sample No.	Visual Description	Photo Interval	Interpreted Summary	Sample No.	Acquisition Notes
1		<i>H<sub>2</sub>O + Flocc' layers</i>		1		
2				2		
3		<i>Brown, silt, no odor</i>		3		<i>EASY CORING</i>
4		<i>no shear</i>		4		
5				5		
6				6		
7		<i>SILT/CLAY, GRAY TO DK</i>		7		
8		<i>BROWN - HIGH</i>		8		
9		<i>PLASTICITY -</i>		9		
10		<i>NO ODOOR / SHEAR</i>		10		
11		<i>SILT - GRAY (LIGHT), trace fine</i>		11		<i>CATCHER</i>
12		<i>sand - free product - oil</i>		12		
13		<i>+ few balls - strong odor</i>		13		
14		<i>strong shear</i>		14		
15				15		
16				16		
17				17		
18				18		

## Core Tube Field Cut Information

Sample No.	Tube Length Interval	Segment Length

## Sample Test Information

Sample No./Tests	In-Situ Depth Int.

## Notes:

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**APPENDIX B**

**LABORATORY REPORT**

July 19, 2005

Service Request No: K0500755

Jerald Ramsden  
Parsons Brickerhoff Quade & Douglas, Incorporated  
400 SW 6th Ave.  
Suite 802  
Portland, OR 97204

**RE: 80294/Ash Grove Cement DM Char.**

Dear Jerald:

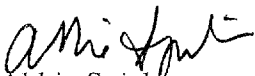
Enclosed are the results of the sample(s) submitted to our laboratory on June 3, 2005. For your reference, these analyses have been assigned our service request number K0500755.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281.

Respectfully submitted,

**Columbia Analytical Services, Inc.**

  
Abbie Spielman  
Project Chemist

AS/jeb

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

### **Metals Data Qualifiers**

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- \* The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

## **Case Narrative**

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Parsons Brickerhoff  
Project: Ash Grove Cement  
Sample Matrix: Sediment

Service Request No.: K0500755  
Date Received: 6/3/05

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven sediment samples were received for analysis at Columbia Analytical Services on 6/3/05. Minor discrepancies were noted upon initial sample inspection. Additional details about the exceptions are noted on the cooler receipt and preservation form included in this data package. These issues were resolved with the client on 6/6/05. All remaining samples were received in good condition and consistent with the accompanying chain of custody forms. The samples for analysis were stored in a refrigerator at 4°C upon receipt at the laboratory. The samples for archive were stored frozen at -20°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Total Metals

**Matrix Spike Recovery Exceptions:**

The matrix spike recovery of Antimony for sample C13-A was below the CAS control criterion. Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analyses. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. Since low recoveries result from a method defect and can be magnified by certain matrix components, no corrective action is appropriate other than using alternative procedures, which specifically target Antimony. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicate the analysis was in control.

No other anomalies associated with the analysis of these samples were observed.

Organochlorine Pesticides by EPA Method 8081A

**Elevated Method Reporting Limits:**

The detection limit is elevated for several analytes in sample C13-A and C123-Z. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the detection limit. The results are flagged to indicate the matrix interference.

**Sample Confirmation Notes:**

The confirmation comparison criteria of 40% difference for 4, 4'-DDE and 4, 4'-DDT was exceeded in sample C13-A. For 4, 4'-DDE, the higher of the two values was reported since no peak anomalies were observed for this analyte. For 4, 4'-DDT, the lower of the two values was reported because an apparent interference on the alternate column that produced the higher value was observed.

Approved by Ami Spill Date 7/19/05

**Continuing Calibration Verification Exceptions:**

The primary evaluation criterion was exceeded for the following analytes in Continuing Calibration Verification (CCV) 0712F021 and 0712F040: Decachlorobiphenyl, alpha-Chlordane, gamma-Chlordane, Dieldrin, 4, 4'-DDD, 4, 4'-DDT. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard meets the alternative evaluation criteria.

Results for 4, 4'-DDT in samples C13-A and C123-Z have been reported from a column using average percent recovery of all analytes in the verification standard.

No other anomalies associated with the analysis of these samples were observed.

**PCB Aroclors by EPA Method 8082****Aroclor Identification:**

Three Aroclors were identified in sample C13-A and C123-Z: Aroclor 1248, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult.

A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1248 was identified and quantitated. Aroclor 1260 was identified based on the presence of PCB peaks eluting late in the chromatogram. The remainder of the PCB pattern was identified as Aroclor 1254 because PCB peak height in the middle of the chromatogram was larger than could be attributed to Aroclor 1242, Aroclor 1248, or Aroclor 1260.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1248, 1254, and 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

No other anomalies associated with the analysis of these samples were observed.

**Semivolatile Organic Compounds by EPA Method 8270C****Elevated Method Reporting Limits:**

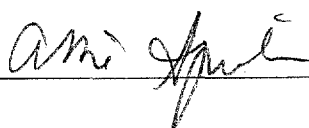
Sample C13-A required dilution due to the presence of elevated levels of target analytes. The reporting limits are adjusted to reflect the dilution.

**Initial Calibration Exceptions:**

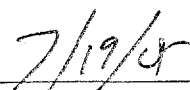
The primary evaluation criterion was exceeded for the following analytes in Initial Calibration (ICAL) ID CAL4553: Benzoic Acid, 2, 4-Dinitrophenol, Pentachlorophenol. The primary evaluation criterion was exceeded for the following analytes in ICAL ID CAL4552: Benzoic Acid, 2, 4-Dinitrophenol. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 5.8% for CAL4553 and 6.0% for CAL4552. The calibration meets the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Date



## **Chain of Custody Documentation**

PROJECT NAME <u>Asst GROVE CEMENT DM CHAR.</u> PROJECT NUMBER <u>80294</u> PROJECT MANAGER <u>JERRY RAMSDEN</u> COMPANY/ADDRESS <u>PARSONS BRINCKERHOFF</u> <u>400 SW 6th AVE, STE 802</u> CITY/STATE/ZIP <u>PORTLAND, OR 97204</u> E-MAIL ADDRESS _____ PHONE # <u>503-274-8772</u> FAX# _____ SAMPLER'S SIGNATURE _____					NUMBER OF CONTAINERS <div style="writing-mode: vertical-rl; transform: rotate(180deg);">           Semivolatile Organics by GC/MS            625 <input type="checkbox"/> 8270 <input checked="" type="checkbox"/> 8270LL <input type="checkbox"/>            Volatile Organics            624 <input type="checkbox"/> 8260 <input checked="" type="checkbox"/>            Hydrocarbons ("see below")            Gas <input type="checkbox"/> 8021 <input type="checkbox"/> BTEX <input type="checkbox"/>  <input type="checkbox"/> Fuel Fingerprint <input type="checkbox"/> Oil <input type="checkbox"/>  <input type="checkbox"/> NW-HCID Screen  <input type="checkbox"/> Oil &amp; Grease/TPH            1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/>            PCB's Aroclors <input type="checkbox"/> TOTAL - <u>357052</u>            Pesticides/Herbicides <input type="checkbox"/> 808 <input type="checkbox"/> 8081A <input checked="" type="checkbox"/> 8082            Chlorophenolics - 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>            Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/>            Metals (Total) or Dissolved (See list below)            Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/>            pH, Cond, Cl, SO4, PO4, F, NO3, NO2, BOD, TSS, TDS (circle)            NH3-N, COD, Total-P, TKN (circle)            DOC (circle) NO2+NO3            TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>            ARCHIVE            TS, TVS            GRAIN SIZE         </div>		REMARKS																																																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>SAMPLE I.D.</th> <th>DATE</th> <th>TIME</th> <th>LAB I.D.</th> <th>MATRIX</th> </tr> </thead> <tbody> <tr> <td>C2-Z</td> <td>6-2-05</td> <td>1235</td> <td></td> <td>SEP</td> </tr> <tr> <td>C1-Z</td> <td></td> <td>1345</td> <td></td> <td></td> </tr> <tr> <td>C1-A</td> <td></td> <td>1350</td> <td></td> <td></td> </tr> <tr> <td>C3-A</td> <td></td> <td>1430</td> <td></td> <td></td> </tr> <tr> <td>C3-Z</td> <td></td> <td>1414</td> <td></td> <td></td> </tr> <tr> <td>C13-A</td> <td></td> <td>1452</td> <td></td> <td></td> </tr> <tr> <td>C123-Z</td> <td>6-26</td> <td>1505</td> <td>SEP</td> <td></td> </tr> <tr><td> </td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td></tr> <tr><td> </td><td></td><td></td><td></td><td></td></tr> </tbody> </table>									SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	C2-Z	6-2-05	1235		SEP	C1-Z		1345			C1-A		1350			C3-A		1430			C3-Z		1414			C13-A		1452			C123-Z	6-26	1505	SEP																										
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C13-A		1452																																																																							
C123-Z	6-26	1505	SEP																																																																						

### REPORT REQUIREMENTS

\_\_\_ I. Routine Report: Method Blank, Surrogate, as required

\_\_\_ II. Report Dup., MS, MSD as required

\_\_\_ III. Data Validation Report (includes all raw data)

\_\_\_ IV. CLP Deliverable Report

\_\_\_ V. EDD

### INVOICE INFORMATION

P.O. # \_\_\_\_\_

Bill To: \_\_\_\_\_

### TURNAROUND REQUIREMENTS

\_\_\_ 24 hr. \_\_\_ 48 hr.

\_\_\_ 5 Day

\_\_\_ Standard (10-15 working days)

\_\_\_ Provide FAX Results

Requested Report Date \_\_\_\_\_

### CIRCLE WHICH METALS ARE TO BE ANALYZED:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg

\*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: \_\_\_\_\_ (CIRCLE ONE)

### SPECIAL INSTRUCTIONS/COMMENTS:

ALL ANALYSES PER SAP 6/6/05

FREEZE ARCHIVES PER SAP

rec'd by black CAS 6/3/05 0800

8260 deleted as per drawing client 6/6/05 or A

RELINQUISHED BY: <u>[Signature]</u> Signature <u>S. S. [Name]</u> Printed Name	RECEIVED BY: <u>[Signature]</u> Signature <u>Jerry Ramsden</u> Printed Name	RELINQUISHED BY: <u>[Signature]</u> Signature <u>Jerry Ramsden</u> Printed Name	RECEIVED BY: <u>6/2/05 4:25 PM</u> <u>[Signature]</u> Signature <u>K. Bailey</u> Printed Name
--	---	---	---

Table 3.1 Testing methods: Dredged Material Management Framework (USACE, 1998)

Parameters	Preparation Method	Analysis Method	Sediment MDL (1)
<i>Conventional Analytes</i>			
Grain Size		Modified ASTM with Hydrometer	
Total Solids (%)		(2)	0.1
Total Volatile Solids (%)		(2)	0.1
Total Organic Carbon (%)		(2,3)	0.1
<i>Metals (mg/kg)</i>			
Antimony	Appendix D (5)	GFAA (6)	2.5
Arsenic	Appendix D (5)	GFAA (6)	2.5
Cadmium	Appendix D (5)	GFAA (6)	0.3
Copper	Appendix D (5)	ICP (7)	15.0
Lead	Appendix D (5)	ICP (7)	0.5
Mercury	MER (8)	7471 (8)	0.02
Nickel	Appendix D (5)	ICP (7)	2.5
Silver	Appendix D (5)	GFAA (6)	0.2
Zinc	Appendix D (5)	ICP (7)	15.0
<i>Organics (ug/kg)</i>			
<i>LPAH</i>			
Naphthalene	3550 (9)	8270 (10)	20
Acenaphthylene	3550 (9)	8270 (10)	20
Acenaphthene	3550 (9)	8270 (10)	20
Flourene	3550 (9)	8270 (10)	20
Phenanthrene	3550 (9)	8270 (10)	20
Anthracene	3550 (9)	8270 (10)	20
2-Methylnaphthalene	3550 (9)	8270 (10)	20



Table 3.1 Continued

<i>Miscellaneous Extractables</i>			
Benzyl alcohol	3550 (9)	8270 (10)	6
Benzoic acid	3550 (9)	8270 (10)	100
Dibenzofuran	3550 (9)	8270 (10)	20
Hexachloroethane	3550 (9)	8270 (10)	20
Hexachlorobutadiene	3550 (9)	8270 (10)	20
N-Nitrosodiphenylamine	3550 (9)	8270 (10)	12
<i>Pesticides</i>			
Total DDT			
p,p'-DDE	3540 (13)	8081 (13)	2.3
p,p'-DDD	3540 (13)	8081 (13)	3.3
p,p'-DDT	3540 (13)	8081 (13)	6.7
Aldrin	3540 (13)	8081 (13)	1.7
Chlordane	3540 (13)	8081 (13)	1.7
Dieldrin	3540 (13)	8081 (13)	2.3
Heptachlor	3540 (13)	8081 (13)	1.7
Lindane	3540 (13)	8081 (13)	1.7
Total PCB's	3540 (13)	8082 (13)	67

\*Total PCB's BT value in ppm carbon-normalized

1. Dry Weight Basis

2. Recommended Protocols for Measuring Conventional Sediment Variables in Puget Sound, Puget Sound Estuary Program, 1997.

3. Recommended Methods for Measuring TOC in Sediments, Kathryn Bragdon-Cook, Clarification Paper, Puget Sound Dredged Disposal Analysis Annual Review, May, 1993.

4. Not used

5. Recommended Protocols for Measuring Metals in Puget Sound Water, Sediment and Tissue Samples, Puget Sound Estuary Program, 1997.

6. Graphite Furnace Atomic Absorption (GFAA) Spectrometry -SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, EPA 1986.

7. Inductively Coupled Plasma (ICP) Emission Spectrometry -SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, EPA 1986.

8. Mercury Digestion and Cold Vapor Atomic Absorption (CVAA) Spectrometry -Method 7471, SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, EPA 1986.

Table 3.1 Continued

<i>HPAH</i>			
Fluoranthene	3550 (9)	8270 (10)	20
Pyrene	3550 (9)	8270 (10)	20
Benzo (a) anthracene	3550 (9)	8270 (10)	20
Chrysene	3550 (9)	8270 (10)	20
Benzo (b) fluoranthene	3550 (9)	8270 (10)	20
Benzo (k) fluoranthene	3550 (9)	8270 (10)	20
Benzo (a) pyrene	3550 (9)	8270 (10)	20
Indeno (1, 2, 3-cd) pyrene	3550 (9)	8270 (10)	20
Dibenz (a, h) anthracene	3550 (9)	8270 (10)	20
Benzo (g, h, i) perylene	3550 (9)	8270 (10)	20
<i>Chlorinated Hydrocarbons</i>			
1,3-Dichlorobenzene	P&T (12)	8260 (11)	3.2
1,4-Dichlorobenzene	P&T (12)	8260 (11)	3.2
1,2-Dichlorobenzene	P&T (12)	8260 (11)	3.2
1,2,4-Trichlorobenzene	3550 (9)	8270 (10)	6
Hexachlorobenzene (HBC)	3550 (9)	8270 (10)	12
<i>Phthalates</i>			
Dimethyl phthalate	3550 (9)	8270 (10)	20
Diethyl Phthalate	3550 (9)	8270 (10)	20
Di-n-butyl phthalate	3550 (9)	8270 (10)	20
Butyl benzyl phthalate	3550 (9)	8270 (10)	20
Bis(2-ethylhexyl)phthalate	3550 (9)	8270 (10)	20
Di-n-octyl phthalate	3550 (9)	8270 (10)	20
<i>Phenols</i>			
Phenol	3550 (9)	8270 (10)	20
2 Methylphenol	3550 (9)	8270 (10)	6
4 Methylphenol	3550 (9)	8270 (10)	20
2,4-Dimethylphenol	3550 (9)	8270 (10)	6
Pentachlorophenol	3550 (9)	8270 (10)	61

**Columbia Analytical Services Inc.  
Cooler Receipt and Preservation Form**

PC AS

Project/Client Parsons Work Order K05 00715  
Cooler received on 6/3/05 and opened on 6/3/05 by A. Juel

1. Were custody seals on outside of coolers? Y ☒ N  
If yes, how many and where? \_\_\_\_\_
2. Were custody seals intact? ~~Y~~ N
3. Were signature and date present on the custody seals? ~~Y~~ N
4. Is the shipper's airbill available and filed? If no, record airbill number: ND Y N
5. COC# \_\_\_\_\_  
Temperature of cooler(s) upon receipt: (°C) 1.5 \_\_\_\_\_  
Temperature Blank: (°C) 0.4 \_\_\_\_\_
- Were samples hand delivered on the same day as collection? ~~Y~~ N
6. Were custody papers properly filled out (ink, signed, etc.)? ☒ N
7. Type of packing material present bags
8. Did all bottles arrive in good condition (unbroken)? ☒ N
9. Were all bottle labels complete (i.e analysis, preservation, etc.)? ☒ N
10. Did all bottle labels and tags agree with custody papers? ☒ N
11. Were the correct types of bottles used for the tests indicated? ☒ N
12. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y~~ N
13. Were VOA vials checked for absence of air bubbles, and if present, noted below? ~~Y~~ N
14. Did the bottles originate from CAS/K or a branch laboratory? ☒ N
15. Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection? ~~Y~~ N
16. Was C12/Res negative? ~~Y~~ N

Explain any discrepancies: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESOLUTION: \_\_\_\_\_

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

## **Total Solids**

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM  
**Sample Matrix:** Sediment

**Service Request:** K0500755

## Total Solids

**Prep Method:** NONE  
**Analysis Method:** 160.3M  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
C13-A	K0500755-006	06/02/2005	06/03/2005	06/07/2005	60.1	
C123-Z	K0500755-007	06/02/2005	06/03/2005	06/07/2005	68.0	

## QA/QC Report

Client: Parsons Brickerhoff Quade & Douglas, Inc  
Project: 80294/Ash Grove Cement DM  
Sample Matrix: Sediment

Service Request: K0500755  
Date Collected: 06/02/2005  
Date Received: 06/03/2005  
Date Analyzed: 06/07/2005

Duplicate Sample Summary  
Total Solids

Prep Method: NONE  
Analysis Method: 160.3M  
Test Notes:

Units: PERCENT  
Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
C13-A	K0500755-006	60.1	59.9	60.0	<1	

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 6/2/2005  
**Date Received:** 6/3/2005

Total Volatile Solids

**Prep Method:** NONE  
**Analysis Method:** 160.4M  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
C13-A	K0500755-006	-	-	1	NA	6/10/2005	5.06	
C123-Z	K0500755-007	-	-	1	NA	6/10/2005	3.76	

M Modified for analysis of soil.

Approved By:                     *M. F. H.*                     Date:           6/17/05

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 6/2/2005  
**Date Received:** 6/3/2005  
**Date Extracted:** NA  
**Date Analyzed:** 6/10/2005

Duplicate Summary  
Inorganic Parameters

**Sample Name:** C13-A  
**Lab Code:** K0500755-006DUP  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Total Volatile Solids	NONE	160.4M	-	5.06	5.18	5.12	2	

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_



## **General Chemistry Parameters**

# COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/05  
**Date Received:** 06/03/05

### Carbon, Total Organic

**Prep Method:** NONE  
**Analysis Method:** PSEP  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
C13-A	K0500755-006	0.05	0.02	1	NA	06/23/05	1.45	
C123-Z	K0500755-007	0.05	0.02	1	NA	06/23/05	1.26	
Method Blank	K0500755-MB	0.05	0.02	1	NA	06/23/05	ND	

Approved By: \_\_\_\_\_

Date: 06/30/05

1A/020597p

K0500755WET.AG1 - Sample 06/30/05

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/05  
**Date Received:** 06/03/05  
**Date Extracted:** NA  
**Date Analyzed:** 06/23/05

Duplicate Summary  
Inorganic Parameters

**Sample Name:** C13-A  
**Lab Code:** K0500755-006DUP  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	NONE	PSEP	0.05	1.45	1.55	1.50	7	

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_

DUP/020597p  
K0500755WET.AG1 - DUP 06/30/05

Page No.:

**COLUMBIA ANALYTICAL SERVICES, INC.**

**QA/QC Report**

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/05  
**Date Received:** 06/03/05  
**Date Extracted:** NA  
**Date Analyzed:** 06/23/05

Triplicate Summary  
Inorganic Parameters

**Sample Name:** C13-A  
**Lab Code:** K0500755-006TRP  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Triplicate Sample Result	Average	Relative Standard Deviation	Result Notes
Carbon, Total Organic	NONE	PSEP	0.05	1.45	1.55	1.47	1.49	4	

Approved By: \_\_\_\_\_

Date: 6/30/05

DUP/020597p  
K0500755WET.AG1 - TRP 06/30/05

Page No.:

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/05  
**Date Received:** 06/03/05  
**Date Extracted:** NA  
**Date Analyzed:** 06/23/05

Matrix Spike Summary  
Inorganic Parameters

**Sample Name:** C13-A  
**Lab Code:** K0500755-006MS  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS	Result Notes
								Percent Recovery Acceptance Limits	
Carbon, Total Organic	NONE	PSEP	0.05	4.88	1.45	6.49	103	75-125	

Approved By: \_\_\_\_\_

Date: 6/30/05

MS/020597p

K0500755WET.AG1 - MS 66/30/05

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorporated  
**Project:** 80294/Ash Grove Cement DM Char.  
**LCS Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** NA  
**Date Analyzed:** 06/23/05

Laboratory Control Sample Summary  
Inorganic Parameters

**Sample Name:** Lab Control Sample  
**Lab Code:** K0500755-LCS  
**Test Notes:**

**Units:** PERCENT  
**Basis:** Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	NONE	PSEP	0.75	0.68	91	85-115	

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_

LCS/020597p

K0500755WET.AG1 - LCS 06/30/05

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Parsons Brickerhoff Quade & Douglas, Incorporated  
Project: 80294/Ash Grove Cement DM Char.

Service Request: K0500755  
Date Collected: NA  
Date Received: NA  
Date Analyzed: 06/23/05

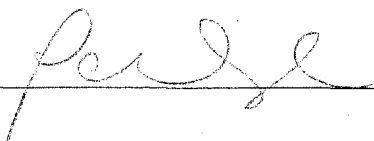
Carbon, Total Organic  
PSEP  
Units: PERCENT

CONTINUING CALIBRATION VERIFICATION (CCV)

	True Value	Measured Value	Percent Recovery
CCV 1 Result	20.0	19.9	100
CCV 2 Result	20.0	20.0	100
CCV 3 Result	20.0	19.7	99
CCV 4 Result	20.0	19.1	96
CCV 5 Result	20.0	19.8	99

CONTINUING CALIBRATION BLANK (CCB)

	MRL	Blank Value
CCB 1 Result	0.05	ND
CCB 2 Result	0.05	0.04 J
CCB 3 Result	0.05	0.03 J
CCB 4 Result	0.05	ND
CCB 5 Result	0.05	0.04 J

Approved By:   
COMBOQCD/042695

Date: 6/30/05

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorp  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 6/2/2005  
**Date Received:** 6/3/2005  
**Date Analyzed:** 6/26/2005

Particle Size Determination  
 Puget Sound Estuary Program Protocol

**Sample Name:** C13-A  
**Lab Code:** K0500755-006

Sand Fraction: Dry Weight (Grams) 18.2525  
 Sand Fraction: Weight Recovered (Grams) 18.2238  
 Sand Fraction: Percent Recovery 99.8

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	0.1452	0.35
Sand, Very Coarse	-1 to 0 Ø	0.1368	0.33
Sand, Coarse	0 to 1 Ø	1.0549	2.58
Sand, Medium	1 to 2 Ø	6.6326	16.2
Sand, Fine	2 to 3 Ø	4.4463	10.9
Sand, Very Fine	3 to 4 Ø	4.3522	10.6
Silt	4 to 8 Ø	20.3450	49.7
Clay	> 8 Ø	4.5200	11.0
Total		41.6330	102

Approved By: WJFH Date: 6/29/05



## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

Client: Parsons Brickerhoff Quade & Douglas, Incorpo  
Project: 80294/Ash Grove Cement DM Char.  
Sample Matrix: Sediment

Service Request: K0500755  
Date Collected: 06/02/05  
Date Received: 06/03/05  
Date Analyzed: 06/26/05

Particle Size Determination  
Puget Sound Estuary Program Protocol

Sample Name: C13-A  
Lab Code: K0500755-006DUP

Sand Fraction: Dry Weight (Grams) 14.1599  
Sand Fraction: Weight Recovered (Grams) 14.0982  
Sand Fraction: Percent Recovery 99.6

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	0.0471	0.16
Sand, Very Coarse	-1 to 0 Ø	0.0641	0.22
Sand, Coarse	0 to 1 Ø	0.8489	2.89
Sand, Medium	1 to 2 Ø	5.1961	17.7
Sand, Fine	2 to 3 Ø	3.4902	11.9
Sand, Very Fine	3 to 4 Ø	3.4691	11.8
Silt	4 to 8 Ø	14.3000	48.7
Clay	> 8 Ø	3.6100	12.3
Total		31.0255	106

Approved By: \_\_\_\_\_



Date: \_\_\_\_\_

6/29/05

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

Client: Parsons Brickerhoff Quade & Douglas, Incorpc  
Project: 80294/Ash Grove Cement DM Char.  
Sample Matrix: Sediment

Service Request: K0500755  
Date Collected: 6/2/2005  
Date Received: 6/3/2005  
Date Analyzed: 6/26/2005

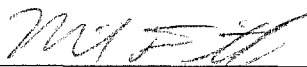
Particle Size Determination  
Puget Sound Estuary Program Protocol

Sample Name: C13-A  
Lab Code: K0500755-006TRIP

Sand Fraction: Dry Weight (Grams) 13.1155  
Sand Fraction: Weight Recovered (Grams) 13.0623  
Sand Fraction: Percent Recovery 99.6

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	0.0653	0.20
Sand, Very Coarse	-1 to 0 Ø	0.0848	0.27
Sand, Coarse	0 to 1 Ø	0.6620	2.08
Sand, Medium	1 to 2 Ø	4.9411	15.5
Sand, Fine	2 to 3 Ø	3.1052	9.74
Sand, Very Fine	3 to 4 Ø	3.1717	9.95
Silt	4 to 8 Ø	15.2450	47.8
Clay	> 8 Ø	4.2150	13.2
Total		31.4901	98.7

Approved By: \_\_\_\_\_



Date: \_\_\_\_\_

6/29/05

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Report

**Client:** Parsons Brickerhoff Quade & Douglas, Incorp  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 6/2/2005  
**Date Received:** 6/3/2005  
**Date Analyzed:** 6/26/2005


Particle Size Determination  
Puget Sound Estuary Program Protocol

**Sample Name:** C123-Z  
**Lab Code:** K0500755-007

Sand Fraction: Dry Weight (Grams) 30.6584  
Sand Fraction: Weight Recovered (Grams) 30.6299  
Sand Fraction: Percent Recovery 99.9

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel	<-1 Ø	0.4505	0.97
Sand, Very Coarse	-1 to 0 Ø	0.4845	1.05
Sand, Coarse	0 to 1 Ø	3.2578	7.03
Sand, Medium	1 to 2 Ø	14.3616	31.0
Sand, Fine	2 to 3 Ø	6.9899	15.1
Sand, Very Fine	3 to 4 Ø	4.2384	9.15
Silt	4 to 8 Ø	13.3550	28.8
Clay	> 8 Ø	3.5650	7.69
Total		46.7027	101

Approved By: \_\_\_\_\_



Date: \_\_\_\_\_

6/29/05

## **Metals**

## METALS

- Cover Page -

## INORGANIC ANALYSIS DATA PACKAGE

Client: Parsons Brickerhoff Quade &amp; Douglas, Incor Service Request: K0500755

Project No.: Ash Grove Cement DM Char.

Project Name: 80294

<u>Sample No.</u>	<u>Lab Sample ID.</u>
C13-A	K0500755-006
C13-AD	K0500755-006D
C13-AS	K0500755-006S
C123-Z	K0500755-007
Method Blank	K0500755-MB

Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before  
application of background corrections?Yes/No NO

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Signature: Date: 7/6/05

## METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Parsons Brickerhoff Quade & Douglas, Incor Service Request: K0500755  
Project No.: Ash Grove Cement DM Char. Date Collected: 06/02/05  
Project Name: 80294 Date Received: 06/03/05  
Matrix: SEDIMENT Units: MG/KG  
Basis: Dry

Sample Name: C13-A

Lab Code: K0500755-006

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	0.06	0.04	5	6/13/05	6/15/05	0.13		N
Arsenic	6020	0.59	0.10	5	6/13/05	6/28/05	3.97		
Cadmium	6020	0.059	0.008	5	6/13/05	6/28/05	0.552		
Copper	6020	0.12	0.05	5	6/13/05	6/28/05	30.3		
Lead	6020	0.06	0.02	5	6/13/05	6/28/05	29.5		
Mercury	7471A	0.019	0.008	1	6/28/05	6/30/05	0.116		
Nickel	6020	0.24	0.11	5	6/13/05	6/28/05	21.9		
Silver	6020	0.024	0.002	5	6/13/05	6/15/05	0.162		
Zinc	6020	0.59	0.24	5	6/13/05	6/28/05	120		

% Solids: 60.1

Comments:

## METALS

-1-

## INORGANIC ANALYSIS DATA SHEET

Client: Parsons Brickerhoff Quade & Douglas, Incor Service Request: K0500755  
Project No.: Ash Grove Cement DM Char. Date Collected: 06/02/05  
Project Name: 80294 Date Received: 06/03/05  
Matrix: SEDIMENT Units: MG/KG  
Basis: Dry

Sample Name: C123-Z

Lab Code: K0500755-007

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	0.05	0.03	5	6/13/05	6/15/05	0.18		N
Arsenic	6020	0.53	0.08	5	6/13/05	6/28/05	4.81		
Cadmium	6020	0.053	0.007	5	6/13/05	6/28/05	0.382		
Copper	6020	0.11	0.04	5	6/13/05	6/28/05	19.8		
Lead	6020	0.05	0.02	5	6/13/05	6/28/05	14.0		
Mercury	7471A	0.013	0.006	1	6/28/05	6/30/05	0.064		
Nickel	6020	0.21	0.09	5	6/13/05	6/28/05	19.2		
Silver	6020	0.021	0.002	5	6/13/05	6/15/05	0.088		
Zinc	6020	0.53	0.21	5	6/13/05	6/28/05	68.3		

% Solids: 68.0

Comments:

METALS  
-1-  
INORGANIC ANALYSIS DATA SHEET

Client: Parsons Brickerhoff Quade & Douglas, Incor      Service Request: K0500755  
Project No.: Ash Grove Cement DM Char.      Date Collected:  
Project Name: 80294      Date Received:  
Matrix: SEDIMENT      Units: MG/KG  
Basis: Dry

Sample Name: Method Blank      Lab Code: K0500755-MB

Analyte	Analysis Method	MRL	MDL	Dil.	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020	0.05	0.03	5	6/13/05	6/15/05	0.03	B	N
Arsenic	6020	0.50	0.08	5	6/13/05	6/28/05	0.08	U	
Cadmium	6020	0.050	0.007	5	6/13/05	6/28/05	0.010	B	
Copper	6020	0.10	0.04	5	6/13/05	6/28/05	0.04	U	
Lead	6020	0.05	0.02	5	6/13/05	6/28/05	0.02	U	
Mercury	7471A	0.020	0.009	1	6/28/05	6/30/05	0.009	U	
Nickel	6020	0.20	0.09	5	6/13/05	6/28/05	0.09	U	
Silver	6020	0.020	0.002	5	6/13/05	6/15/05	0.003	B	
Zinc	6020	0.50	0.20	5	6/13/05	6/28/05	0.20	U	

% Solids: 100.0

Comments:



## METALS

- 2a -

## INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc. Service Request: K0500755

Project No.: Ash Grove Cement DM

Project Name: 80294

ICV Source: Inorganic Ventures

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic	50.0	51.0	102	25.0	25.2	101	25.3	101	6020
Cadmium	25.0	25.6	102	25.0	24.6	98	24.8	99	6020
Copper	25.0	25.7	102	25.0	25.5	102	25.6	102	6020
Lead	50.0	51.3	102	25.0	25.5	102	26.6	106	6020
Mercury	5.0	5.19	104	5.0	4.89	98	4.83	97	7471A
Nickel	50.0	50.8	102	25.0	25.8	103	25.9	104	6020
Zinc	50.0	50.6	101	25.0	24.7	99	24.9	99	6020

METALS  
- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Parsons Brickerhoff Quade & Douglas, Inc. Service Request: K0500755  
Project No.: Ash Grove Cement DM  
Project Name: 80294

ICV Source: CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				25.0	25.5	102	25.3	101	6020
Cadmium				25.0	25.0	100	25.2	101	6020
Copper				25.0	25.3	101	24.0	96	6020
Lead				25.0	26.6	106	26.7	107	6020
Mercury				5.0	4.85	97	4.85	97	7471A
Nickel				25.0	25.2	101	24.3	97	6020
Zinc				25.0	24.8	99	24.4	98	6020

## METALS

- 2a -

## INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc. Service Request: K0500755

Project No.: Ash Grove Cement DM

Project Name: 80294

ICV Source:

CCV Source: Various

Concentration Units: ug/l

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Arsenic				25.0	25.4	102	25.7	103	6020
Cadmium				25.0	24.5	98	24.5	98	6020
Copper				25.0	26.2	105	25.9	104	6020
Lead				25.0	27.3	109	26.7	107	6020
Nickel				25.0	26.8	107	26.6	106	6020
Zinc				25.0	24.8	99	24.7	99	6020

METALS  
- 2b -  
CRDL STANDARD FOR AA AND ICP

Client: Parsons Brickerhoff Quade & Douglas, Incorp Service Request: K0500755  
Project No.: Ash Grove Cement  
Project Name: 80294

Concentration Units: ug/l

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	Initial		Final		
				True	Found	%R	Found	%R
Arsenic				0.50	0.50	100		
Cadmium				0.02	0.014	67		
Copper				0.10	0.10	99		
Lead				0.02	0.02	97		
Mercury	0.20	0.193	97					
Nickel				0.20	0.18	89		
Zinc				0.50	0.51	102		

## METALS

- 3 -

## BLANKS

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc Service Request: K0500755

Project No.: Ash Grove Cemen

Project Name: 80294

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		Method
		C	1	C	2	C	3	C	C		
Arsenic	0.16	U	0.16	U	0.16	U	0.16	U			6020
Cadmium	0.014	U	0.014	U	0.02	B	0.018	B			6020
Copper	0.08	U	0.08	U	0.08	U	0.08	U			6020
Lead	0.04	U	0.04	U	0.04	U	0.04	U			6020
Mercury	0.090	U	0.090	U	0.09	U	0.090	U			7471A
Nickel	0.18	U	0.18	U	0.18	U	0.18	U			6020
Zinc	0.40	U	0.40	U	0.40	U	0.40	U			6020

## METALS

- 3 -

## BLANKS

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc Service Request: K0500755

Project No.: Ash Grove Cemen

Project Name: 80294

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank C			Method
			1	C	2	C	3	C				
Arsenic			0.16	U	0.16	U	0.16	U				6020
Cadmium			0.020	B	0.04	B	0.024	B				6020
Copper			0.08	U	0.08	U	0.08	U				6020
Lead			0.04	U	0.04	U	0.04	U				6020
Mercury			0.090	U								7471A
Nickel			0.18	U	0.18	U	0.18	U				6020
Zinc			0.40	U	0.40	U	0.40	U				6020

## METALS

- 4 -

## ICP INTERFERENCE CHECK SAMPLE

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc. Service Request: K0500755

Project No.: Ash Grove Cement DM C

Project Name: 80294

ICP ID Number: PQ-S

ICS Source: Inorganic Ventures

Concentration Units): ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Arsenic		20	0.02	21.0	105			
Cadmium		20	0.537	20.4	102			
Copper		20	0.54	20.6	103			
Lead			0.18	0.17				
Nickel		20	0.43	22.0	110			
Zinc		20	1.06	20.7	104			

## METALS

-5a-

## SPIKE SAMPLE RECOVERY

Client: Parsons Brickerhoff Quade & Douglas, Service Request: K0500755  
 Project No.: Ash Grove Cement DM Char. Units: mg/kg  
 Project Name: 80294 Basis: Dry  
 Matrix: SEDIMENT % Solids: 60.1

Sample Name: C13-AS

Lab Code: K0500755-006S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Antimony	70 - 130	29.0		0.13		117	25	N	6020
Arsenic	70 - 122	113		3.97		118	92		6020
Cadmium	77 - 122	12.1		0.552		11.8	97		6020
Copper	50 - 142	94.1		30.3		59.0	108		6020
Lead	74 - 117	157		29.5		118	108		6020
Mercury	61 - 129	0.538		0.116		0.458	92		7471A
Nickel	73 - 121	147		21.9		118	106		6020
Silver	70 - 130	11.4		0.162		11.7	96		6020
Zinc	51 - 153	247		120		118	108		6020

An empty field in the Control Limit column indicates the control limit is not applicable.



## METALS

- 5b -

## POST DIGEST SPIKE SAMPLE RECOVERY

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc. Service Request: K0500755

Project No.: Ash Grove Cement DM Char.

Units: ug/L

Project Name: 80294

Matrix: SEDIMENT

Sample Name:

C13-AA

Lab Code: K0500755-006A

Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR) C	Spike Added (SA)	%R	Q	M
Antimony	75-125	9.56	0.22	10.0	93		MS
Arsenic	75-125	22.9	6.68	20.0	81		MS
Cadmium	75-125	18.6	0.928	20.0	88		MS
Copper	75-125	66.4	51.0	20.0	77		MS
Lead	75-125	71.7	49.7	20.0	110		MS
Nickel	75-125	54.5	36.8	20.0	88		MS
Silver	75-125	9.44	0.272	10.0	92		MS
Zinc	75-125	241	203	50.0	78		MS

Comments: \_\_\_\_\_

METALS  
- 6 -  
DUPLICATES

Client: Parsons Brickerhoff Quade & Douglas, Inc. Service Request: K0500755  
Project No.: Ash Grove Cement DM Char. Units: mg/kg  
Project Name: 80294 Basis: Dry  
Matrix: SEDIMENT % Solids: 60.1

Sample Name: C13-AD Lab Code: K0500755-006D

Analyte	Control Limit(%)	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony		0.13		0.12		5		6020
Arsenic	30	3.97		3.79		5		6020
Cadmium	30	0.552		0.517		7		6020
Copper	30	30.3		27.6		9		6020
Lead	30	29.5		25.8		13		6020
Mercury	30	0.116		0.089		26		7471A
Nickel	30	21.9		20.6		6		6020
Silver	30	0.162		0.192		17		6020
Zinc	30	120		108		11		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

## METALS

-7-

## LABORATORY CONTROL SAMPLE

Client: Parsons Brickerhoff Quade &amp; Douglas, Incor Service Request: K0500755

Project No.: Ash Grove Cement DM Char.

Project Name: 80294

Aqueous LCS Source: Inorganic Ventures

Solid LCS Source: ERA Lot #246

Analyte	Aqueous mg/L			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Arsenic				187	187		139	235
Cadmium				67.9	65.8		52.0	83.6
Copper				91.3	91.7		74.8	108
Lead				125	141		95.2	155
Mercury				1.49	1.45		0.852	2.12
Nickel				78.0	82.0		61.1	94.9
Zinc				283	248		219	347

METALS  
- 9 -  
ICP SERIAL DILUTIONS

Client: Parsons Brickerhoff Quade & Douglas, Inc Service Request: K0500755  
Project No.: Ash Grove Cement DM C Units: ug/L  
Project Name: 80294

Sample Name: C13-AL Lab Code: K0500755-006L

Analyte	Initial Sample Result (I) C	Serial Dilution Result (S) C	% Differ-	Q	Method
Antimony	0.22	0.30	U		6020
Arsenic	6.68	8.24	23		6020
Cadmium	0.928	1.07	15	E	6020
Copper	51.0	67.8	33	E	6020
Lead	49.7	51.9	4		6020
Nickel	36.8	46.7	27	E	6020
Silver	0.272	0.344	26	E	6020
Zinc	203	278	38	E	6020

METALS

-10-

METHOD DETECTION LIMITS

Client: Parsons Brickerhoff Quade & Douglas, Incor Service Request: K0500755

Project No.: Ash Grove Cement DM Char.

Project Name: 80294

ICP/ICP-MS ID #:

GFAA ID #:

AA ID #: CETAC-1

Analyte	Wave-length	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Mercury	253.70	BD	0.200	0.090	7471A

Comments

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METALS

-10-

METHOD DETECTION LIMITS

Client: Parsons Brickerhoff Quade & Douglas, Incor Service Request: K0500755  
Project No.: Ash Grove Cement DM Char.  
Project Name: 80294

ICP/ICP-MS ID #: PQ-S

GFAA ID #:

AA ID #:

Analyte	Mass	Back-ground	MRL (ug/L)	MDL (ug/L)	Method
Arsenic	75		1.00	0.16	6020
Cadmium	111		0.100	0.014	6020
Copper	65		0.20	0.08	6020
Lead	208		0.10	0.04	6020
Nickel	60		0.40	0.18	6020
Zinc	66		1.00	0.40	6020

omments

## METALS

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## ICP LINEAR RANGES (QUARTERLY)

Client: Parsons Brickerhoff Quade &amp; Douglas, Inc. Service Request: K0500755

Project No.: Ash Grove Cement DM Ch

Project Name: 80294

ICP ID Number: Excell ICPMS

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Antimony	15.00	500.0	6020
Silver	15.00	300.0	6020

Comments:

## METALS

-12-

## ICP LINEAR RANGES (QUARTERLY)

Client: Parsons Brickerhoff Quade &amp; Douglas, Ir Service Request: K0500755

Project No.: Ash Grove Cement DM Ch

Project Name: 80294

ICP ID Number: PQ-S

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Arsenic	15.00	500.0	6020
Cadmium	15.00	500.0	6020
Copper	15.00	300.0	6020
Lead	15.00	500.0	6020
Nickel	15.00	300.0	6020
Zinc	15.00	400.0	6020

Comments: \_\_\_\_\_



METALS  
- 13 -  
PREPARATION LOG

Client: Parsons Brickerhoff Quade & Douglas, Inc    Service Request: K0500755  
Project No.: Ash Grove Cement DM Char  
Project 80294

Method: CV

Lab Code	Preparation Date	Preparation Method	Initial (mL or grams)	Final Volume (mL)
K0500755-007	6/28/05	METHOD	2.27	100
K0500755-006	6/28/05	METHOD	1.80	100
K0500755-006D	6/28/05	METHOD	1.74	100
K0500755-006S	6/28/05	METHOD	1.82	100
LCSS	6/28/05	METHOD	0.509	100
K0500755-MB	6/28/05	METHOD	1.00	100

METALS  
- 13 -  
PREPARATION LOG

Client: Parsons Brickerhoff Quade & Douglas, Inc    Service Request: K0500755  
Project No.: Ash Grove Cement DM Char  
Project 80294

Method: MS

Lab Code	Preparation Date	Preparation Method	Initial (mL or grams)	Final Volume (mL)
K0500755-007	6/13/05	EPA 3050B	1.40	100
K0500755-006	6/13/05	EPA 3050B	1.40	100
K0500755-006D	6/13/05	EPA 3050B	1.40	100
K0500755-006S	6/13/05	EPA 3050B	1.41	100
LCSS	6/13/05	EPA 3050B	1.00	100
K0500755-MB	6/13/05	EPA 3050B	1.00	100

K0500755-007	6/13/05	EPA 3050B	1.40	100
K0500755-006	6/13/05	EPA 3050B	1.40	100
K0500755-006D	6/13/05	EPA 3050B	1.40	100
K0500755-006S	6/13/05	EPA 3050B	1.42	100
LCSS	6/13/05	EPA 3050B	1.00	100
K0500755-MB	6/13/05	EPA 3050B	1.00	100

**Organochlorine Pesticides**  
**EPA Method 8081**

Organic Analysis:  
Organochlorine Pesticides

Summary Package

Sample and QC Results

## COLUMBIA ANALYTICAL SERVICES, INC.

Client: Parsons Brickerhoff Quade & Douglas, Inc  
Project: 80294/Ash Grove Cement DM Char.

Service Request: K0500755

Cover Page - Organic Analysis Data Package  
Organochlorine Pesticides

Sample Name	Lab Code	Date Collected	Date Received
C13-A	K0500755-006	06/02/2005	06/03/2005
C123-Z	K0500755-007	06/02/2005	06/03/2005
C13-AMS	KWG0509789-1	06/02/2005	06/03/2005
C13-ADMS	KWG0509789-2	06/02/2005	06/03/2005

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: M. Hendrickson

Name: M. Hendrickson

Date: 7/12/05

Title: Scientist

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: 06/02/2005  
 Date Received: 06/03/2005

## Organochlorine Pesticides

Sample Name: C13-A  
 Lab Code: K0500755-006  
 Extraction Method: EPA 3540C  
 Analysis Method: 8081A

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND U	1.0	0.37	1	06/15/05	07/13/05	KWG0509789	
Heptachlor	ND U	1.0	0.29	1	06/15/05	07/13/05	KWG0509789	
Aldrin	ND U	1.0	0.16	1	06/15/05	07/13/05	KWG0509789	
gamma-Chlordane†	ND Ui	1.0	1.0	1	06/15/05	07/13/05	KWG0509789	
alpha-Chlordane	ND U	1.0	0.19	1	06/15/05	07/13/05	KWG0509789	
Dieldrin	ND Ui	1.0	1.0	1	06/15/05	07/13/05	KWG0509789	
4,4'-DDE	5.4 P	1.0	0.22	1	06/15/05	07/13/05	KWG0509789	
4,4'-DDD	3.7	1.0	0.090	1	06/15/05	07/13/05	KWG0509789	
4,4'-DDT	2.5 P	1.0	0.15	1	06/15/05	07/13/05	KWG0509789	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	73	38-125	07/13/05	Acceptable
Decachlorobiphenyl	72	26-166	07/13/05	Acceptable

## † Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: 06/02/2005  
 Date Received: 06/03/2005

## Organochlorine Pesticides

Sample Name: C123-Z  
 Lab Code: K0500755-007  
 Extraction Method: EPA 3540C  
 Analysis Method: 8081A

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	1.0	0.33	1	06/15/05	07/13/05	KWG0509789	
Heptachlor	ND	Ui	1.0	1.0	1	06/15/05	07/13/05	KWG0509789	
dieldrin	ND	Ui	1.0	0.16	1	06/15/05	07/13/05	KWG0509789	
gamma-Chlordane†	0.55	J	1.0	0.089	1	06/15/05	07/13/05	KWG0509789	
alpha-Chlordane	ND	U	1.0	0.17	1	06/15/05	07/13/05	KWG0509789	
Dieldrin	ND	Ui	1.0	1.0	1	06/15/05	07/13/05	KWG0509789	
1,4'-DDE	2.9		1.0	0.20	1	06/15/05	07/13/05	KWG0509789	
1,4'-DDD	1.6		1.0	0.080	1	06/15/05	07/13/05	KWG0509789	
1,4'-DDT	1.2		1.0	0.14	1	06/15/05	07/13/05	KWG0509789	*

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	70	38-125	07/13/05	Acceptable
Decachlorobiphenyl	73	26-166	07/13/05	Acceptable

## Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: NA  
 Date Received: NA

## Organochlorine Pesticides

Sample Name: Method Blank  
 Lab Code: KWG0509789-4  
 Extraction Method: EPA 3540C  
 Analysis Method: 8081A

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
gamma-BHC (Lindane)	ND	U	0.61	0.22	1	06/15/05	07/13/05	KWG0509789	
Heptachlor	ND	U	0.61	0.17	1	06/15/05	07/13/05	KWG0509789	
Aldrin	ND	U	0.61	0.096	1	06/15/05	07/13/05	KWG0509789	
gamma-Chlordane†	ND	U	0.61	0.060	1	06/15/05	07/13/05	KWG0509789	
alpha-Chlordane	ND	U	0.61	0.11	1	06/15/05	07/13/05	KWG0509789	
Dieldrin	ND	U	0.61	0.046	1	06/15/05	07/13/05	KWG0509789	
4,4'-DDE	ND	U	0.61	0.13	1	06/15/05	07/13/05	KWG0509789	
4,4'-DDD	ND	U	0.61	0.054	1	06/15/05	07/13/05	KWG0509789	
4,4'-DDT	ND	U	0.61	0.089	1	06/15/05	07/13/05	KWG0509789	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	38-125	07/13/05	Acceptable
Decachlorobiphenyl	76	26-166	07/13/05	Acceptable

## † Analyte Comments

gamma-Chlordane For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:



## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Parsons Brickerhoff Quade & Douglas, Inc  
Project: 80294/Ash Grove Cement DM Char.  
Sample Matrix: Sediment

Service Request: K0500755

Surrogate Recovery Summary  
Organochlorine Pesticides

Extraction Method: EPA 3540C  
Analysis Method: 8081A

Units: PERCENT  
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
C13-A	K0500755-006	73	72
C123-Z	K0500755-007	70	73
Method Blank	KWG0509789-4	72	76
C13-AMS	KWG0509789-1	68	69
C13-ADMS	KWG0509789-2	69	67
Lab Control Sample	KWG0509789-3	76	78

## Surrogate Recovery Control Limits (%)

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Sur1 = Tetrachloro-m-xylene	38-125
Sur2 = Decachlorobiphenyl	26-166

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Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

## COLUMBIA ANALYTICAL SERVICES, INC.

## QA/QC Report

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Extracted: 06/15/2005  
 Date Analyzed: 07/13/2005

Matrix Spike/Duplicate Matrix Spike Summary  
 Organochlorine Pesticides

Sample Name: C13-A  
 Lab Code: K0500755-006  
 Extraction Method: EPA 3540C  
 Analysis Method: 8081A

Units: ug/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0509789

Analyte Name	Sample Result	C13-AMS KWG0509789-1 Matrix Spike			C13-ADMS KWG0509789-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
gamma-BHC (Lindane)	ND	15.1	20.0	75	14.7	20.0	74	45-153	3	50
Heptachlor	ND	13.7	20.0	68	14.0	20.0	70	35-151	3	50
Aldrin	ND	13.4	20.0	67	13.3	20.0	67	39-143	1	50
gamma-Chlordane	ND	14.4	20.0	72	14.9	20.0	74	33-161	3	50
alpha-Chlordane	ND	13.3	20.0	66	13.5	20.0	67	40-140	2	50
Dieldrin	ND	13.0	20.0	65	12.7	20.0	64	48-142	2	50
4,4'-DDE	5.4	17.9	20.0	62	18.6	20.0	66	35-146	4	50
4,4'-DDD	3.7	18.6	20.0	75	16.9	20.0	66	32-156	9	50
4,4'-DDT	2.5	17.0	20.0	73	16.7	20.0	71	31-161	2	50

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Parsons Brickerhoff Quade & Douglas, Inc  
Project: 80294/Ash Grove Cement DM Char.  
Sample Matrix: Sediment

Service Request: K0500755  
Date Extracted: 06/15/2005  
Date Analyzed: 07/13/2005

Lab Control Spike Summary  
Organochlorine Pesticides

Extraction Method: EPA 3540C  
Analysis Method: 8081A

Units: ug/Kg  
Basis: Dry  
Level: Low  
Extraction Lot: KWG0509789

Analyte Name	Lab Control Sample KWG0509789-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
gamma-BHC (Lindane)	18.3	20.0	91	70-125
Heptachlor	16.7	20.0	84	69-120
Aldrin	16.4	20.0	82	67-120
gamma-Chlordane	16.7	20.0	83	74-117
alpha-Chlordane	16.9	20.0	84	72-116
Dieldrin	16.5	20.0	83	74-121
1,4'-DDE	17.3	20.0	87	73-126
1,4'-DDD	17.2	20.0	86	74-130
4,4'-DDT	17.6	20.0	88	75-132

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005  
**Date Analyzed:** 07/13/2005  
**Time Analyzed:** 04:17

**Method Blank Summary**  
**Organochlorine Pesticides**

**Sample Name:** Method Blank  
**Lab Code:** KWG0509789-4  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8081A

**File ID:** J:\GC23\DATA\071205\0712F025.D  
**Instrument ID:** GC23  
**Level:** Low  
**Extraction Lot:** KWG0509789

This Method Blank applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
Lab Control Sample	KWG0509789-3	J:\GC23\DATA\071205\0712F026.D	07/13/05	04:43
C13-A	K0500755-006	J:\GC23\DATA\071205\0712F027.D	07/13/05	05:09
C13-AMS	KWG0509789-1	J:\GC23\DATA\071205\0712F028.D	07/13/05	05:35
C13-ADMS	KWG0509789-2	J:\GC23\DATA\071205\0712F029.D	07/13/05	06:01
C123-Z	K0500755-007	J:\GC23\DATA\071205\0712F030.D	07/13/05	06:28

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005  
**Date Analyzed:** 07/13/2005  
**Time Analyzed:** 04:43

**Lab Control Sample Summary**  
**Organochlorine Pesticides**

**Sample Name:** Lab Control Sample  
**Lab Code:** KWG0509789-3  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8081A

**File ID:** J:\GC23\DATA\071205\0712F026.D  
**Instrument ID:** GC23  
**Level:** Low  
**Extraction Lot:** KWG0509789

This Lab Control Sample applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
Method Blank	KWG0509789-4	J:\GC23\DATA\071205\0712F025.D	07/13/05	04:17
C13-A	K0500755-006	J:\GC23\DATA\071205\0712F027.D	07/13/05	05:09
C13-AMS	KWG0509789-1	J:\GC23\DATA\071205\0712F028.D	07/13/05	05:35
C13-ADMS	KWG0509789-2	J:\GC23\DATA\071205\0712F029.D	07/13/05	06:01
C123-Z	K0500755-007	J:\GC23\DATA\071205\0712F030.D	07/13/05	06:28

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005

**Extraction Prep Log**  
**Organochlorine Pesticides**

**Extraction Method:** EPA 3540C  
**Analysis Method:** 8081A

**Extraction Lot:** KWG0509789  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
C13-A	K0500755-006	06/02/05	06/03/05	33.30g	4ml	60.1	
C123-Z	K0500755-007	06/02/05	06/03/05	29.46g	4ml	68.0	
Method Blank	KWG0509789-4	NA	NA	33.32g	4ml	NA	
C13-AMS	KWG0509789-1	06/02/05	06/03/05	33.32g	4ml	60.1	
C13-ADMS	KWG0509789-2	06/02/05	06/03/05	33.31g	4ml	60.1	
Lab Control Sample	KWG0509789-3	NA	NA	20.00g	4ml	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

## Confirmation Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/2005  
**Date Received:** 06/03/2005  
**Date Extracted:** 06/15/2005

## Organochlorine Pesticides

**Sample Name:** C13-A  
**Lab Code:** K0500755-006  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8081A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	%D	Q	Dilution Factor	Date Analyzed
1,4'-DDE	1.0	0.22	5.4	3.0	57.1	P	1	07/13/05
1,4'-DDD	1.0	0.090	3.7	3.5	5.6		1	07/13/05
1,4'-DDT	1.0	0.15	2.5	3.8	41.3	P	1	07/13/05

## Confirmation Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/2005  
**Date Received:** 06/03/2005  
**Date Extracted:** 06/15/2005

## Organochlorine Pesticides

**Sample Name:** C123-Z  
**Lab Code:** K0500755-007  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8081A

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	%D	Q	Dilution Factor	Date Analyzed
gamma-Chlordane	1.0	0.089	0.55	0.68	21.1	J	1	07/13/05
4,4'-DDE	1.0	0.20	2.9	2.1	32.0		1	07/13/05
4,4'-DDD	1.0	0.080	1.6	1.5	6.5		1	07/13/05
4,4'-DDT	1.0	0.14	1.2	1.3	8.0		1	07/13/05



**Polychlorinated Biphenyls**  
**PCB's**  
**EPA Method 8082**

Organic Analysis:  
Polychlorinated Biphenyls (PCBs)

Summary Package

Sample and QC Results

Client:  
Project:Parsons Brickerhoff Quade & Douglas, Inc.  
80294/Ash Grove Cement DM Char.

Service Request: K0500755

Cover Page - Organic Analysis Data Package  
Polychlorinated Biphenyls (PCBs)

Sample Name	Lab Code	Date Collected	Date Received
C13-A	K0500755-006	06/02/2005	06/03/2005
C123-Z	K0500755-007	06/02/2005	06/03/2005
C123-ZMS	KWG0509790-1	06/02/2005	06/03/2005
C123-ZDMS	KWG0509790-2	06/02/2005	06/03/2005

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Tarot L. HesterName: Tarot L. HesterDate: 7/8/05Title: Scientist

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
Project: 80294/Ash Grove Cement DM Char.  
Sample Matrix: Sediment

Service Request: K0500755  
Date Collected: 06/02/2005  
Date Received: 06/03/2005

## Polychlorinated Biphenyls (PCBs)

Sample Name: C13-A  
Lab Code: K0500755-006  
Extraction Method: EPA 3540C  
Analysis Method: 8082

Units: ug/Kg  
Basis: Dry  
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.2	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1221	ND	U	20	2.2	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1232	ND	U	10	2.2	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1242	ND	U	10	2.2	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1248	100		10	2.2	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1254	72		10	2.2	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1260	52		10	2.2	1	06/15/05	06/27/05	KWG0509790	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	90	20-161	06/27/05	Acceptable

Comments:

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: 06/02/2005  
 Date Received: 06/03/2005

## Polychlorinated Biphenyls (PCBs)

Sample Name: C123-Z  
 Lab Code: K0500755-007  
 Extraction Method: EPA 3540C  
 Analysis Method: 8082

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	2.0	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1221	ND	U	20	2.0	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1232	ND	U	10	2.0	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1242	ND	U	10	2.0	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1248	13		10	2.0	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1254	24		10	2.0	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1260	17		10	2.0	1	06/15/05	06/27/05	KWG0509790	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	72	20-161	06/27/05	Acceptable

Comments: \_\_\_\_\_

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** NA  
**Date Received:** NA

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** Method Blank  
**Lab Code:** KWG0509790-4  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	6.1	1.3	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1221	ND	U	13	1.3	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1232	ND	U	6.1	1.3	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1242	ND	U	6.1	1.3	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1248	ND	U	6.1	1.3	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1254	ND	U	6.1	1.3	1	06/15/05	06/27/05	KWG0509790	
Aroclor 1260	ND	U	6.1	1.3	1	06/15/05	06/27/05	KWG0509790	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	85	20-161	06/27/05	Acceptable

Comments:

Client: Parsons Brickerhoff Quade & Douglas, Inc  
Project: 80294/Ash Grove Cement DM Char.  
Sample Matrix: Sediment

Service Request: K0500755

Surrogate Recovery Summary  
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C  
Analysis Method: 8082

Units: PERCENT  
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
C13-A	K0500755-006	90
C123-Z	K0500755-007	72
Method Blank	KWG0509790-4	85
C123-ZMS	KWG0509790-1	73
C123-ZDMS	KWG0509790-2	73
Lab Control Sample	KWG0509790-3	77

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Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 20-161

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Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005  
**Date Analyzed:** 06/27/2005

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** C123-Z  
**Lab Code:** K0500755-007  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG0509790

Analyte Name	Sample Result	C123-ZMS KWG0509790-1 Matrix Spike			C123-ZDMS KWG0509790-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Aroclor 1016	ND	152	200	76	144	199	72	33-155	5	50
Aroclor 1260	17	191	200	87	182	199	83	36-161	4	50

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005  
**Date Analyzed:** 06/27/2005

**Lab Control Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG0509790

Analyte Name	Lab Control Sample KWG0509790-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Aroclor 1016	148	200	74	43-141
Aroclor 1260	161	200	81	50-145

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005  
**Date Analyzed:** 06/27/2005  
**Time Analyzed:** 17:34

**Method Blank Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** Method Blank  
**Lab Code:** KWG0509790-4

**File ID:** J:\GC09\DATA\062705.B\0627F012.D  
**Instrument ID:** GC09.i

**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Level:** Low  
**Extraction Lot:** KWG0509790

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0509790-3	J:\GC09\DATA\062705.B\0627F013.D	06/27/05	18:00
C13-A	K0500755-006	J:\GC09\DATA\062705.B\0627F014.D	06/27/05	18:26
C123-Z	K0500755-007	J:\GC09\DATA\062705.B\0627F015.D	06/27/05	18:52
C123-ZMS	KWG0509790-1	J:\GC09\DATA\062705.B\0627F016.D	06/27/05	19:19
C123-ZDMS	KWG0509790-2	J:\GC09\DATA\062705.B\0627F017.D	06/27/05	19:45

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005  
**Date Analyzed:** 06/27/2005  
**Time Analyzed:** 18:00

**Lab Control Sample Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Sample Name:** Lab Control Sample  
**Lab Code:** KWG0509790-3  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**File ID:** J:\GC09\DATA\062705.B\0627F013.D  
**Instrument ID:** GC09.i  
**Level:** Low  
**Extraction Lot:** KWG0509790

This Lab Control Sample applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
Method Blank	KWG0509790-4	J:\GC09\DATA\062705.B\0627F012.D	06/27/05	17:34
C13-A	K0500755-006	J:\GC09\DATA\062705.B\0627F014.D	06/27/05	18:26
C123-Z	K0500755-007	J:\GC09\DATA\062705.B\0627F015.D	06/27/05	18:52
C123-ZMS	KWG0509790-1	J:\GC09\DATA\062705.B\0627F016.D	06/27/05	19:19
C123-ZDMS	KWG0509790-2	J:\GC09\DATA\062705.B\0627F017.D	06/27/05	19:45

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/15/2005

**Extraction Prep Log**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Extraction Lot:** KWG0509790  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
C13-A	K0500755-006	06/02/05	06/03/05	33.30g	4ml	60.1	
C123-Z	K0500755-007	06/02/05	06/03/05	29.46g	4ml	68.0	
Method Blank	KWG0509790-4	NA	NA	33.30g	4ml	NA	
C123-ZMS	KWG0509790-1	06/02/05	06/03/05	29.47g	4ml	68.0	
C123-ZDMS	KWG0509790-2	06/02/05	06/03/05	29.49g	4ml	68.0	
Lab Control Sample	KWG0509790-3	NA	NA	20.00g	4ml	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

## COLUMBIA ANALYTICAL SERVICES, INC.

## Confirmation Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/2005  
**Date Received:** 06/03/2005  
**Date Extracted:** 06/15/2005

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** C13-A  
**Lab Code:** K0500755-006  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	%D	Q	Dilution Factor	Date Analyzed
Aroclor 1248	10	2.2	100	93	7.3		1	06/27/05
Aroclor 1254	10	2.2	72	66	8.7		1	06/27/05
Aroclor 1260	10	2.2	52	41	23.7		1	06/27/05

## COLUMBIA ANALYTICAL SERVICES, INC.

## Confirmation Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/2005  
**Date Received:** 06/03/2005  
**Date Extracted:** 06/15/2005

## Polychlorinated Biphenyls (PCBs)

**Sample Name:** C123-Z  
**Lab Code:** K0500755-007  
**Extraction Method:** EPA 3540C  
**Analysis Method:** 8082

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low

Analyte Name	MRL	MDL	Primary Result	Confirmation Result	%D	Q	Dilution Factor	Date Analyzed
Aroclor 1248	10	2.0	13	13	0.0		1	06/27/05
Aroclor 1254	10	2.0	24	20	18.2		1	06/27/05
Aroclor 1260	10	2.0	17	15	12.5		1	06/27/05

**Semi-Volatile Organic Compounds**  
**EPA Method 8270C**

Organic Analysis:  
Semi-Volatile Organic Compounds by GC/MS

Summary Package

Sample and QC Results



Client:  
Project:Parsons Brickerhoff Quade & Douglas, Inc  
80294/Ash Grove Cement DM Char.

Service Request: K0500755

Cover Page - Organic Analysis Data Package  
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
C13-A	K0500755-006	06/02/2005	06/03/2005
C123-Z	K0500755-007	06/02/2005	06/03/2005
C123-ZMS	KWG0509114-1	06/02/2005	06/03/2005
C123-ZDMS	KWG0509114-2	06/02/2005	06/03/2005

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: Carl DyerDate: 7/6/05Title: SVM Supervisor

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/2005  
**Date Received:** 06/03/2005

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** C13-A  
**Lab Code:** K0500755-006

**Units:** ug/Kg  
**Basis:** Dry

**Extraction Method:** EPA 3541

**Level:** Low

**Analysis Method:** 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	ND	U	250	32	10	06/08/05	06/26/05	KWG0509114	
1,3-Dichlorobenzene	ND	U	84	27	10	06/08/05	06/26/05	KWG0509114	
1,4-Dichlorobenzene	ND	U	84	32	10	06/08/05	06/26/05	KWG0509114	
1,2-Dichlorobenzene	ND	U	84	22	10	06/08/05	06/26/05	KWG0509114	
Benzyl Alcohol	ND	U	84	62	10	06/08/05	06/26/05	KWG0509114	
2-Methylphenol	ND	U	84	57	10	06/08/05	06/26/05	KWG0509114	
Hexachloroethane	ND	U	84	37	10	06/08/05	06/26/05	KWG0509114	
4-Methylphenol†	ND	U	84	49	10	06/08/05	06/26/05	KWG0509114	
2,4-Dimethylphenol	ND	U	420	92	10	06/08/05	06/26/05	KWG0509114	
Benzoic Acid	ND	U	1700	1600	10	06/08/05	06/26/05	KWG0509114	
1,2,4-Trichlorobenzene	ND	U	84	25	10	06/08/05	06/26/05	KWG0509114	
<b>Naphthalene</b>	<b>150</b>	<b>D</b>	84	22	10	06/08/05	06/26/05	KWG0509114	
Hexachlorobutadiene	ND	U	84	24	10	06/08/05	06/26/05	KWG0509114	
<b>2-Methylnaphthalene</b>	<b>51</b>	<b>JD</b>	84	20	10	06/08/05	06/26/05	KWG0509114	
<b>Acenaphthylene</b>	<b>160</b>	<b>D</b>	84	24	10	06/08/05	06/26/05	KWG0509114	
Dimethyl Phthalate	ND	U	84	30	10	06/08/05	06/26/05	KWG0509114	
<b>Acenaphthene</b>	<b>49</b>	<b>JD</b>	84	17	10	06/08/05	06/26/05	KWG0509114	
Dibenzofuran	ND	U	84	22	10	06/08/05	06/26/05	KWG0509114	
<b>Fluorene</b>	<b>57</b>	<b>JD</b>	84	29	10	06/08/05	06/26/05	KWG0509114	
Diethyl Phthalate	ND	U	84	59	10	06/08/05	06/26/05	KWG0509114	
N-Nitrosodiphenylamine	ND	U	84	37	10	06/08/05	06/26/05	KWG0509114	
Hexachlorobenzene	ND	U	84	35	10	06/08/05	06/26/05	KWG0509114	
Pentachlorophenol	ND	U	840	150	10	06/08/05	06/26/05	KWG0509114	
<b>Phenanthrene</b>	<b>500</b>	<b>D</b>	84	22	10	06/08/05	06/26/05	KWG0509114	
<b>Anthracene</b>	<b>150</b>	<b>D</b>	84	24	10	06/08/05	06/26/05	KWG0509114	
Di-n-butyl Phthalate	ND	U	84	44	10	06/08/05	06/26/05	KWG0509114	
<b>Fluoranthene</b>	<b>2500</b>	<b>D</b>	84	37	10	06/08/05	06/26/05	KWG0509114	
<b>Pyrene</b>	<b>3100</b>	<b>D</b>	84	22	10	06/08/05	06/26/05	KWG0509114	
Butyl Benzyl Phthalate	ND	U	84	25	10	06/08/05	06/26/05	KWG0509114	
<b>Benz(a)anthracene</b>	<b>1700</b>	<b>D</b>	84	24	10	06/08/05	06/26/05	KWG0509114	
<b>Chrysene</b>	<b>2200</b>	<b>D</b>	84	24	10	06/08/05	06/26/05	KWG0509114	
<b>Bis(2-ethylhexyl) Phthalate</b>	<b>46</b>	<b>JD</b>	1700	29	10	06/08/05	06/26/05	KWG0509114	
Di-n-octyl Phthalate	ND	U	84	20	10	06/08/05	06/26/05	KWG0509114	

Comments:

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: 06/02/2005  
 Date Received: 06/03/2005

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: C13-A  
 Lab Code: K0500755-006  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(b)fluoranthene	1900	D	84	42	10	06/08/05	06/26/05	KWG0509114	
Benzo(k)fluoranthene	610	D	84	42	10	06/08/05	06/26/05	KWG0509114	
Benzo(a)pyrene	2200	D	84	27	10	06/08/05	06/26/05	KWG0509114	
Indeno(1,2,3-cd)pyrene	1400	D	84	32	10	06/08/05	06/26/05	KWG0509114	
Dibenz(a,h)anthracene	240	D	84	37	10	06/08/05	06/26/05	KWG0509114	
Benzo(g,h,i)perylene	1500	D	84	39	10	06/08/05	06/26/05	KWG0509114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	56	11-87	06/26/05	Acceptable
Phenol-d6	60	20-99	06/26/05	Acceptable
Nitrobenzene-d5	50	10-99	06/26/05	Acceptable
2-Fluorobiphenyl	54	10-104	06/26/05	Acceptable
2,4,6-Tribromophenol	69	23-113	06/26/05	Acceptable
Terphenyl-d14	83	39-124	06/26/05	Acceptable

## Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

## Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Collected:** 06/02/2005  
**Date Received:** 06/03/2005

## Semi-Volatile Organic Compounds by GC/MS

**Sample Name:** C123-Z  
**Lab Code:** K0500755-007

**Units:** ug/Kg  
**Basis:** Dry

**Extraction Method:** EPA 3541

**Level:** Low

**Analysis Method:** 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	60		23	2.8	1	06/08/05	06/23/05	KWG0509114	
1,3-Dichlorobenzene	ND	U	7.4	2.4	1	06/08/05	06/23/05	KWG0509114	
1,4-Dichlorobenzene	ND	U	7.4	2.8	1	06/08/05	06/23/05	KWG0509114	
1,2-Dichlorobenzene	ND	U	7.4	2.0	1	06/08/05	06/23/05	KWG0509114	
Benzyl Alcohol	17		7.4	5.5	1	06/08/05	06/23/05	KWG0509114	
2-Methylphenol	ND	U	7.4	5.0	1	06/08/05	06/23/05	KWG0509114	
Hexachloroethane	ND	U	7.4	3.3	1	06/08/05	06/23/05	KWG0509114	
4-Methylphenol†	ND	U	7.4	4.3	1	06/08/05	06/23/05	KWG0509114	
2,4-Dimethylphenol	ND	U	37	8.1	1	06/08/05	06/23/05	KWG0509114	
Benzoic Acid	ND	U	150	150	1	06/08/05	06/23/05	KWG0509114	
1,2,4-Trichlorobenzene	ND	U	7.4	2.3	1	06/08/05	06/23/05	KWG0509114	
Naphthalene	9.6		7.4	2.0	1	06/08/05	06/23/05	KWG0509114	
Hexachlorobutadiene	ND	U	7.4	2.1	1	06/08/05	06/23/05	KWG0509114	
2-Methylnaphthalene	6.1	J	7.4	1.8	1	06/08/05	06/23/05	KWG0509114	
Acenaphthylene	12		7.4	2.1	1	06/08/05	06/23/05	KWG0509114	
Dimethyl Phthalate	18		7.4	2.7	1	06/08/05	06/23/05	KWG0509114	
Acenaphthene	16		7.4	1.5	1	06/08/05	06/23/05	KWG0509114	
Dibenzofuran	4.0	J	7.4	2.0	1	06/08/05	06/23/05	KWG0509114	
Fluorene	11		7.4	2.5	1	06/08/05	06/23/05	KWG0509114	
Diethyl Phthalate	ND	U	7.4	5.2	1	06/08/05	06/23/05	KWG0509114	
N-Nitrosodiphenylamine	ND	U	7.4	3.3	1	06/08/05	06/23/05	KWG0509114	
Hexachlorobenzene	ND	U	7.4	3.1	1	06/08/05	06/23/05	KWG0509114	
Pentachlorophenol	ND	U	74	13	1	06/08/05	06/23/05	KWG0509114	
Phenanthrene	64		7.4	2.0	1	06/08/05	06/23/05	KWG0509114	
Anthracene	14		7.4	2.1	1	06/08/05	06/23/05	KWG0509114	
Di-n-butyl Phthalate	5.8	J	7.4	3.9	1	06/08/05	06/23/05	KWG0509114	
Fluoranthene	100		7.4	3.3	1	06/08/05	06/23/05	KWG0509114	
Pyrene	110		7.4	2.0	1	06/08/05	06/23/05	KWG0509114	
Butyl Benzyl Phthalate	ND	U	7.4	2.3	1	06/08/05	06/23/05	KWG0509114	
Benz(a)anthracene	41		7.4	2.1	1	06/08/05	06/23/05	KWG0509114	
Chrysene	61		7.4	2.1	1	06/08/05	06/23/05	KWG0509114	
Bis(2-ethylhexyl) Phthalate	21	J	150	2.5	1	06/08/05	06/23/05	KWG0509114	
Di-n-octyl Phthalate	ND	U	7.4	1.8	1	06/08/05	06/23/05	KWG0509114	

Comments:

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: 06/02/2005  
 Date Received: 06/03/2005

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: C123-Z  
 Lab Code: K0500755-007  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(b)fluoranthene	65		7.4	3.7	1	06/08/05	06/23/05	KWG0509114	
Benzo(k)fluoranthene	18		7.4	3.7	1	06/08/05	06/23/05	KWG0509114	
Benzo(a)pyrene	50		7.4	2.4	1	06/08/05	06/23/05	KWG0509114	
Indeno(1,2,3-cd)pyrene	43		7.4	2.8	1	06/08/05	06/23/05	KWG0509114	
Dibenz(a,h)anthracene	8.2		7.4	3.3	1	06/08/05	06/23/05	KWG0509114	
Benzo(g,h,i)perylene	46		7.4	3.4	1	06/08/05	06/23/05	KWG0509114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	58	11-87	06/23/05	Acceptable
Phenol-d6	65	20-99	06/23/05	Acceptable
Nitrobenzene-d5	61	10-99	06/23/05	Acceptable
2-Fluorobiphenyl	44	10-104	06/23/05	Acceptable
2,4,6-Tribromophenol	78	23-113	06/23/05	Acceptable
Terphenyl-d14	69	39-124	06/23/05	Acceptable

## Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:

## COLUMBIA ANALYTICAL SERVICES, INC.

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Collected: NA  
 Date Received: NA

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank  
 Lab Code: KWG0509114-5  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Phenol	3.1	J	15	1.9	1	06/08/05	06/23/05	KWG0509114	
1,3-Dichlorobenzene	ND	U	5.0	1.6	1	06/08/05	06/23/05	KWG0509114	
1,4-Dichlorobenzene	ND	U	5.0	1.9	1	06/08/05	06/23/05	KWG0509114	
1,2-Dichlorobenzene	ND	U	5.0	1.3	1	06/08/05	06/23/05	KWG0509114	
Benzyl Alcohol	ND	U	5.0	3.7	1	06/08/05	06/23/05	KWG0509114	
2-Methylphenol	ND	U	5.0	3.4	1	06/08/05	06/23/05	KWG0509114	
Hexachloroethane	ND	U	5.0	2.2	1	06/08/05	06/23/05	KWG0509114	
4-Methylphenol†	ND	U	5.0	2.9	1	06/08/05	06/23/05	KWG0509114	
2,4-Dimethylphenol	ND	U	25	5.5	1	06/08/05	06/23/05	KWG0509114	
Benzoic Acid	ND	U	100	96	1	06/08/05	06/23/05	KWG0509114	
1,2,4-Trichlorobenzene	ND	U	5.0	1.5	1	06/08/05	06/23/05	KWG0509114	
Naphthalene	ND	U	5.0	1.3	1	06/08/05	06/23/05	KWG0509114	
Hexachlorobutadiene	ND	U	5.0	1.4	1	06/08/05	06/23/05	KWG0509114	
2-Methylnaphthalene	ND	U	5.0	1.2	1	06/08/05	06/23/05	KWG0509114	
Acenaphthylene	ND	U	5.0	1.4	1	06/08/05	06/23/05	KWG0509114	
Dimethyl Phthalate	ND	U	5.0	1.8	1	06/08/05	06/23/05	KWG0509114	
Acenaphthene	ND	U	5.0	1.0	1	06/08/05	06/23/05	KWG0509114	
Dibenzofuran	ND	U	5.0	1.3	1	06/08/05	06/23/05	KWG0509114	
Fluorene	ND	U	5.0	1.7	1	06/08/05	06/23/05	KWG0509114	
Diethyl Phthalate	ND	U	5.0	3.5	1	06/08/05	06/23/05	KWG0509114	
N-Nitrosodiphenylamine	ND	U	5.0	2.2	1	06/08/05	06/23/05	KWG0509114	
Hexachlorobenzene	ND	U	5.0	2.1	1	06/08/05	06/23/05	KWG0509114	
Pentachlorophenol	ND	U	50	8.5	1	06/08/05	06/23/05	KWG0509114	
Phenanthrene	ND	U	5.0	1.3	1	06/08/05	06/23/05	KWG0509114	
Anthracene	ND	U	5.0	1.4	1	06/08/05	06/23/05	KWG0509114	
Di-n-butyl Phthalate	ND	U	5.0	2.6	1	06/08/05	06/23/05	KWG0509114	
Fluoranthene	ND	U	5.0	2.2	1	06/08/05	06/23/05	KWG0509114	
Pyrene	ND	U	5.0	1.3	1	06/08/05	06/23/05	KWG0509114	
Butyl Benzyl Phthalate	ND	U	5.0	1.5	1	06/08/05	06/23/05	KWG0509114	
Benz(a)anthracene	ND	U	5.0	1.4	1	06/08/05	06/23/05	KWG0509114	
Chrysene	ND	U	5.0	1.4	1	06/08/05	06/23/05	KWG0509114	
Bis(2-ethylhexyl) Phthalate	ND	U	100	1.7	1	06/08/05	06/23/05	KWG0509114	
Di-n-octyl Phthalate	ND	U	5.0	1.2	1	06/08/05	06/23/05	KWG0509114	

Comments:

## Analytical Results

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755

Date Collected: NA

Date Received: NA

## Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank  
 Lab Code: KWG0509114-5

Units: ug/Kg

Basis: Dry

Extraction Method: EPA 3541

Level: Low

Analysis Method: 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzo(b)fluoranthene	ND	U	5.0	2.5	1	06/08/05	06/23/05	KWG0509114	
Benzo(k)fluoranthene	ND	U	5.0	2.5	1	06/08/05	06/23/05	KWG0509114	
Benzo(a)pyrene	ND	U	5.0	1.6	1	06/08/05	06/23/05	KWG0509114	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1.9	1	06/08/05	06/23/05	KWG0509114	
Dibenz(a,h)anthracene	ND	U	5.0	2.2	1	06/08/05	06/23/05	KWG0509114	
Benzo(g,h,i)perylene	ND	U	5.0	2.3	1	06/08/05	06/23/05	KWG0509114	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	54	11-87	06/23/05	Acceptable
Phenol-d6	60	20-99	06/23/05	Acceptable
Nitrobenzene-d5	57	10-99	06/23/05	Acceptable
2-Fluorobiphenyl	64	10-104	06/23/05	Acceptable
2,4,6-Tribromophenol	53	23-113	06/23/05	Acceptable
Terphenyl-d14	91	39-124	06/23/05	Acceptable

## Analyte Comments

4-Methylphenol This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755

**Surrogate Recovery Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: PERCENT  
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
C13-A	K0500755-006	56 D	60 D	50 D	54 D	69 D	83 D
C123-Z	K0500755-007	58	65	61	44	78	69
Method Blank	KWG0509114-5	54	60	57	64	53	91
C123-ZMS	KWG0509114-1	59	67	66	59	82	74
C123-ZDMS	KWG0509114-2	58	65	62	62	86	78
Lab Control Sample	KWG0509114-3	60	66	71	73	88	90
Duplicate Lab Control Sample	KWG0509114-4	67	73	81	81	96	95

**Surrogate Recovery Control Limits (%)**

Sur1 = 2-Fluorophenol	11-87	Sur5 = 2,4,6-Tribromophenol	23-113
Sur2 = Phenol-d6	20-99	Sur6 = Terphenyl-d14	39-124
Sur3 = Nitrobenzene-d5	10-99		
Sur4 = 2-Fluorobiphenyl	10-104		

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.



Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Extracted: 06/08/2005  
 Date Analyzed: 06/23/2005

Matrix Spike/Duplicate Matrix Spike Summary  
 Semi-Volatile Organic Compounds by GC/MS

Sample Name: C123-Z  
 Lab Code: K0500755-007  
 Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0509114

Analyte Name	Sample Result	C123-ZMS KWG0509114-1 Matrix Spike			C123-ZDMS KWG0509114-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Phenol	60	162	184	55	156	184	52	21-106	4	40
1,4-Dichlorobenzene	ND	85.8	184	47	83.8	184	46	10-77	2	40
1,2,4-Trichlorobenzene	ND	95.4	184	52	103	184	56	10-89	8	40
Acenaphthene	16	171	184	84	143	184	69	10-140	18	40
Pentachlorophenol	ND	189	184	103	137	184	75	10-132	32	40
Pyrene	110	362	184	137	243	184	73	10-173	39	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/08/2005  
**Date Analyzed:** 06/23/2005

**Lab Control Spike/Duplicate Lab Control Spike Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**Units:** ug/Kg  
**Basis:** Dry  
**Level:** Low  
**Extraction Lot:** KWG0509114

Analyte Name	Lab Control Sample KWG0509114-3 Lab Control Spike			Duplicate Lab Control Sample KWG0509114-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Phenol	209	250	83	229	250	91	30-107	9	40
1,3-Dichlorobenzene	156	250	62	175	250	70	38-94	11	40
1,4-Dichlorobenzene	152	250	61	168	250	67	38-92	10	40
1,2-Dichlorobenzene	168	250	67	182	250	73	39-96	8	40
Benzyl Alcohol	152	250	61	175	250	70	32-102	14	40
2-Methylphenol	166	250	66	203	250	81	17-97	20	40
Hexachloroethane	158	250	63	173	250	69	38-98	9	40
4-Methylphenol	174	250	70	209	250	83	14-99	18	40
2,4-Dimethylphenol	105	250	42	147	250	59	10-72	33	40
Benzoic Acid	366	750	49	308	750	41	10-83	17	40
1,2,4-Trichlorobenzene	159	250	64	177	250	71	37-98	11	40
Naphthalene	162	250	65	182	250	73	39-97	12	40
Hexachlorobutadiene	162	250	65	173	250	69	38-96	7	40
2-Methylnaphthalene	156	250	62	176	250	70	38-95	12	40
Acenaphthylene	187	250	75	214	250	86	46-106	14	40
Dimethyl Phthalate	185	250	74	219	250	88	44-107	17	40
Acenaphthene	177	250	71	206	250	82	42-98	15	40
Dibenzofuran	173	250	69	194	250	78	41-99	12	40
Fluorene	185	250	74	213	250	85	43-104	14	40
Diethyl Phthalate	196	250	79	224	250	90	45-114	13	40
N-Nitrosodiphenylamine	203	250	81	228	250	91	27-123	11	40
Hexachlorobenzene	199	250	80	221	250	88	49-107	10	40
Pentachlorophenol	206	250	82	216	250	87	25-114	5	40
Phenanthrene	191	250	76	215	250	86	48-101	12	40
Anthracene	197	250	79	220	250	88	50-106	11	40
Di-n-butyl Phthalate	205	250	82	226	250	90	49-126	10	40
Fluoranthene	209	250	83	225	250	90	51-119	8	40
Pyrene	197	250	79	214	250	85	51-109	8	40
Butyl Benzyl Phthalate	202	250	81	209	250	83	54-123	3	40
Benz(a)anthracene	216	250	86	229	250	92	57-115	6	40
Chrysene	218	250	87	230	250	92	59-120	5	40
Bis(2-ethylhexyl) Phthalate	208	250	83	223	250	89	52-136	7	40
Di-n-octyl Phthalate	205	250	82	222	250	89	54-127	8	40
Benzo(b)fluoranthene	211	250	84	231	250	92	54-116	9	40
Benzo(k)fluoranthene	212	250	85	230	250	92	56-115	8	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Parsons Brickerhoff Quade & Douglas, Inc  
 Project: 80294/Ash Grove Cement DM Char.  
 Sample Matrix: Sediment

Service Request: K0500755  
 Date Extracted: 06/08/2005  
 Date Analyzed: 06/23/2005

Lab Control Spike/Duplicate Lab Control Spike Summary  
 Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541  
 Analysis Method: 8270C

Units: ug/Kg  
 Basis: Dry  
 Level: Low  
 Extraction Lot: KWG0509114

Analyte Name	Lab Control Sample KWG0509114-3 Lab Control Spike			Duplicate Lab Control Sample KWG0509114-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Benzo(a)pyrene	214	250	86	237	250	95	53-120	10	40
Indeno(1,2,3-cd)pyrene	225	250	90	249	250	100	52-125	10	40
Dibenz(a,h)anthracene	235	250	94	259	250	104	53-122	10	40
Benzo(g,h,i)perylene	216	250	87	237	250	95	45-124	9	40

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755  
**Date Extracted:** 06/08/2005  
**Date Analyzed:** 06/23/2005  
**Time Analyzed:** 15:32

**Method Blank Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** Method Blank  
**Lab Code:** KWG0509114-5  
**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**File ID:** J:\MS10\DATA\062305\0623F015.D  
**Instrument ID:** MS10  
**Level:** Low  
**Extraction Lot:** KWG0509114

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG0509114-3	J:\MS10\DATA\062305\0623F016.D	06/23/05	16:10
Duplicate Lab Control Sample	KWG0509114-4	J:\MS10\DATA\062305\0623F017.D	06/23/05	16:48
C123-ZMS	KWG0509114-1	J:\MS10\DATA\062305\0623F018.D	06/23/05	17:25
C123-ZDMS	KWG0509114-2	J:\MS10\DATA\062305\0623F019.D	06/23/05	18:03
C123-Z	K0500755-007	J:\MS10\DATA\062305\0623F020.D	06/23/05	18:41
C13-A	K0500755-006	J:\MS06\DATA\062605\0626F015.D	06/26/05	17:56

**Client:** Parsons Brickerhoff Quade & Douglas, Inc  
**Project:** 80294/Ash Grove Cement DM Char.  
**Sample Matrix:** Sediment

**Service Request:** K0500755

**Lab Control Sample/Duplicate Lab Control Sample Summary**  
**Semi-Volatile Organic Compounds by GC/MS**

**Sample Name:** Lab Control Sample  
**Lab Code:** KWG0509114-3  
**File ID:** J:\MS10\DATA\062305\0623F016.D  
**Instrument ID:** MS10  
**Date Extracted:** 06/08/2005  
**Date Analyzed:** 06/23/2005  
**Time Analyzed:** 16:10

**Sample Name:** Duplicate Lab Control Sample  
**Lab Code:** KWG0509114-4  
**File ID:** J:\MS10\DATA\062305\0623F017.D  
**Instrument ID:** MS10  
**Date Extracted:** 06/08/2005  
**Date Analyzed:** 06/23/2005  
**Time Analyzed:** 16:48

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270C

**Level:** Low  
**Extraction Lot:** KWG0509114

These Lab Control Samples apply to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
Method Blank	KWG0509114-5	J:\MS10\DATA\062305\0623F015.D	06/23/05	15:32
C123-ZMS	KWG0509114-1	J:\MS10\DATA\062305\0623F018.D	06/23/05	17:25
C123-ZDMS	KWG0509114-2	J:\MS10\DATA\062305\0623F019.D	06/23/05	18:03
C123-Z	K0500755-007	J:\MS10\DATA\062305\0623F020.D	06/23/05	18:41
C13-A	K0500755-006	J:\MS06\DATA\062605\0626F015.D	06/26/05	17:56

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## APPENDIX C

### QA1 CHECKLISTS

**CHECKLIST FOR CONVENTIONAL VARIABLES**

Project Name Ash Grove Cement DM Charac. Report K0500755  
 Lab CAS Lab #                      # Field Samples<sup>a</sup> 2  
 Reviewed by SB/Integral Consulting Date 7/21/2005

## Dates:

Sampling 6/2/2005 Elapsed Time (Days):  
 Shipping 6/3/2005 1  
 Receiving 6/3/2005 1

Problems noted (e.g., deviation from prescribed methods, analytical problems):

No problems were noted.

**COMPLETENESS AND HOLDING CONDITIONS**

	TOC	TVS	Total Sulfides	Ammonia	Total Solids	Grain Size Distribution
Method (identify)	PSEP	160.4M	not analyzed	not analyzed	160.3M	PSEP
# Analyzed	2	2	--	--	2	2
# Submitted	2	2	--	--	2	2

Holding conditions acceptable? (Y/N)

Yes

If no, identify samples:

**FORMAT**

Concentrations in proper units and significant figures? (Y/N)

Yes

Sample detection limit provided, when applicable? (Y/N)

Yes

Qualifiers defined:

**QA/QC SAMPLES****Method Blank**

Total # 1 (TOC)  
 Frequency (minimum 1/batch)<sup>b</sup> 1/batch  
 Amount detected in blank not detected  
 (no PSEP control limit)

**Standard Reference Material**

Total # Laboratory Control Sample (TOC)  
 Frequency (minimum 1/survey)<sup>b</sup> 1/batch  
 SRM used --  
 Within 95% confidence interval? (Y/N) 91% recovery (85-115 acceptable range)  
 (not a PSEP control limit)

**Analytical Replicates**

	TOC	TVS	Total Sulfides	Ammonia	Total Solids	Grain Size Distribution
Total #	1 trip	1 dup	--	--	1 dup	1 trip
Frequency	1/batch	1/batch	--	--	1/batch	1/batch

(minimum 1 triplicate per 20 samples)<sup>b</sup>

Analytes with RPD &gt;20% (not a PSEP control limit):

none

**CHECKLIST FOR CONVENTIONAL VARIABLES (continued)****Matrix Spikes**

Total #	<u>1 (TOC)</u>
Frequency	<u>1/batch</u>

Chemicals with recovery outside 75-125%:

<u>none</u>	<u></u>
<u></u>	<u></u>

<sup>a</sup>All samples collected in field (laboratory QA samples excluded).<sup>b</sup>Recommended by PSEP.



**CHECKLIST FOR METALS**

Project Name Ash Grove Cement DM Charac. Report K0500755  
 Lab CAS Lab #                      # Field Samples<sup>a</sup> 2  
 Reviewed by SB/Integral Consulting Date 7/21/2005  
 Dates:  
 Sampling 6/2/2005 Elapsed Time (Days):  
 Shipping 6/3/2005 1  
 Receiving 6/3/2005 1

Problems noted (e.g., deviation from prescribed methods, analytical problems):

The matrix spike recovery of antimony for sample C13-A was below the lab's lower recovery limit. Sediment antimony recoveries are typically below the recovery limit when using the 3050 digestion method. Other QA/QC samples (LCS, calibration standards, etc.) indicated that the analysis itself was in control and the lab felt no qualification was necessary.

**COMPLETENESS AND HOLDING CONDITIONS**

	Metals except mercury	Mercury
Method (identify)	6020	7471A
# Analyzed	2	2
# Submitted	2	2

Holding conditions acceptable? (Y/N) Yes  
 (six months frozen for metals except mercury; 28 days frozen for mercury)  
 If no, identify samples:

**FORMAT**

Concentrations in proper units and significant figures? (Y/N) Yes  
 Qualifiers defined:  
 B Estimated value <MRL and >MDL  
 U Not detected at or above MRL/MDL  
 N Matrix Spike sample recovery not within limits  
 Sample detection limits provided for each analyte? (Y/N) Yes  
 Did detection limits exceed screening levels? (Y/N) No  
 If yes, identify samples with detection limits exceeding screening levels:

Antimony	_____	Arsenic	_____	Cadmium	_____
Copper	_____	Lead	_____	Mercury	_____
Nickel	_____	Silver	_____	Zinc	_____

**QA/QC SAMPLES****Preparation Blank**

Total # 1  
 Frequency<sup>c</sup> 1/batch  
 (minimum 5% or 1/batch, whichever is more frequent)<sup>b</sup>  
 Chemicals observed above detection limits in one or more blanks:<sup>b</sup>  
antimony, cadmium, silver (B qualified)

**Standard Reference Material**

Total # 1 Lab Control Sample  
 Frequency<sup>c</sup> 1/batch  
 (minimum 5% or 1/batch, whichever is more frequent)<sup>b</sup>  
 SRM used ERA Lot #246  
 Chemicals outside 80-120% recovery (for chemicals without certified values, use matrix spike results):<sup>b</sup>  
none

**CHECKLIST FOR METALS (continued)****Analytical Replicates**Total # 1Frequency<sup>c</sup> 1/batch(minimum 5% or 1/batch, whichever is more frequent)<sup>b</sup>Chemicals with >20% relative percent difference or coefficient of variation:<sup>b</sup>Mercury (26%) - The lab's control limit is 30%RPD and so was not flagged by the lab.**Matrix Spikes**Total # 1Frequency<sup>c</sup> 1/batch(minimum 5% or 1/batch, whichever is more frequent)<sup>b</sup>Chemicals with recovery outside 75-125%:<sup>b</sup>Antimony (25%)<sup>a</sup>All samples collected in field (laboratory QA samples excluded).<sup>b</sup>Recommended by PSEP.<sup>c</sup>For batches of five samples or less, the minimum QA checks should be a blank and the analysis of an SRM (and matrix spikes for any analysis not certified in the SRM). In general, the priority of QA checks for batches of  $\leq 5$  samples should be as follows: SRM > analytical replicates > matrix spikes.

## CHECKLIST FOR SEMIVOLATILE ORGANIC CHEMICALS

Project Name Ash Grove Cement DM Charac. Report K0500755  
 Lab CAS Lab #                      # Field Samples<sup>a</sup> 2  
 Reviewed by SB/Integral Consulting Date 7/21/2005  
 Dates:

Sampling 6/2/2005 Elapsed Time (Days):  
 Shipping 6/3/2005 1  
 Receiving 6/3/2005 1

Problems noted (e.g., deviation from prescribed methods, analytical problems):

Pesticides: MRLs were elevated for several analytes due to matrix interferences and were flagged by the lab as such ("i" qualified). Also, sample confirmation comparison criteria (40% difference) for 4,4'-DDE and 4,4'-DDT was exceeded in Sample C13-A. For 4,4'-DDE, the higher of the two values was selected because no peak anomalies were noted. For 4,4'-DDT, the lower of the two values was reported because the alternate column showed matrix interferences. PCBs: Due to the presence of Aroclor mixtures, care was taken by the lab (continued at end of sheet)

## COMPLETENESS AND HOLDING CONDITIONS

	A/B/N	Pesticides/PCB
Method (identify)	8270C	8081A
# Analyzed	2	2
# Submitted	2	2

Holding conditions acceptable? (Y/N) Yes  
 (one year for frozen sediment; six months for frozen tissue)

If no, identify samples:

Extraction times acceptable? (Y/N) Yes  
 If no, identify samples:

## FORMAT

Concentrations in proper units and significant figures? (Y/N) Yes  
 Qualifiers defined:

J	Estimated value <MRL and >MDL	D	Reported result is from a dilution
P	GC or HPLC criteria exceeded		
U	Not detected at or above the MRL/MDL		
i	MRL/MDL elevated due to interference		

Sample detection limits provided for each analyte? (Y/N) Yes  
 Did detection limits exceed screening levels? (Y/N) Yes

If yes, identify samples with detection limits exceeding screening levels:

C13-A: benzyl alcohol, 2,4-dimethylphenol, benzoic acid, n-nitrosodiphenylamine, hexachlorobezene

## QA/QC SAMPLES

## Method Blank

Total # 1  
 Frequency 1/batch

(minimum one per extraction batch)<sup>b</sup>

Chemicals observed above 5 ug for phthalates and 2.5 ug for others (lower levels may be appropriate for pesticides and PCBs):

SVOCs - Phenol @ 3.1J µg/kg	Pest/PCBs - not detected
All others not detected.	

**CHECKLIST FOR SEMIVOLATILE ORGANIC CHEMICALS (continued)****Standard Reference Material**

Total # 1 Lab Control Sample

Frequency 1/batch

(<=50 samples - one per batch; >50 samples - one per 50 samples analyzed)<sup>b</sup>

SRM used

Chemicals outside 95% confidence interval (for certified values):<sup>b</sup>

none outside acceptable limits

**Analytical Replicates**

Total # 1 MS/MSD &amp; 1 Lab Control Sample/Dup Lab Control Sample (SVOCs)

Frequency 1/batch

(<=20 samples - one per batch; >20 samples - one triplicate and additional duplicate for minimum of 5% total replication)<sup>c</sup>Chemicals with >100% relative percent difference or coefficient of variation:<sup>b</sup>

none

**Matrix Spikes**

Total # 1 MS/MSD

Frequency 1/batch

(<=20 samples - one per batch; >20 samples - 5% of total samples)<sup>b</sup>Chemicals with <50% recovery:<sup>b</sup>

1,4-dichlorobenzene (MS-47%, MSD-46%)

Problems noted (e.g., deviation from prescribed methods, analytical problems) CONTINUED:

to select the analytical peaks based on the best resolution. The lab acknowledged that the potential exists for a high bias in this case because more than one Aroclor can contribute to common peaks or peaks can not be resolved. SVOCs: MRLs for C13-A are elevated due to the need for dilution. Also, the primary evaluation criterion for benzoic acid, 2,3-dinitrophenol, and pentachlorophenol was exceeded during initial calibration. In accordance with the Method, the lab used an alternative method for evaluating performance (RSD of all analytes). This alternative method met criteria. No other problems were noted.

<sup>a</sup>All samples collected in field (laboratory QA samples excluded).<sup>b</sup>Recommended by PSEP.<sup>c</sup>Recommended by PSEP. A matrix spike duplicate can serve as an analytical replicate.

---

## APPENDIX D

### SUMMARY OF SEDIMENT PHYSICAL AND CHEMICAL RESULTS

Sediment chemistry results compared with DMMP criteria.  
Shaded concentrations exceed corresponding DMMP values. Criteria updated June 2005.

	DMMP			DMMU	
	Screening Level (SL)	Bioaccumulation Trigger (BT)	Maximum Level (ML)	C13-A	C123-Z
<i>Phthalates</i>					
Dimethyl phthalate	71	---	1,400	30 U	18
Diethyl phthalate	200	---	1,200	59 U	5.2 U
Di-n-butyl phthalate	1,400	---	5,100	44 U	5.8 J
Butylbenzyl phthalate	63	---	970	25 U	2.3 U
Bis(2-Ethylhexyl) phthalate	1,300	---	8,300	46 JD	21 J
Di-n-octyl phthalate	6,200	---	6,200	20 U	1.8 U
<i>Phenols</i>					
Phenol	420	---	1,200	32 U	60
2-Methylphenol	63	---	77	57 U	5.0 U
4-Methylphenol	670	---	3,600	49 U	4.3 U
2,4-Dimethylphenol	29	---	210	92 U	8.1 U
Pentachlorophenol	400	504	690	150 U	13 U
<i>Miscellaneous Extractables</i>					
Benzyl Alcohol	57	---	870	62 U	17
Benzoic Acid	650	---	760		150 U
Dibenzofuran	540	---	1,700	22 U	4.0 J
Hexachlorobutadiene	29	---	270	24 U	2.1 U
N-Nitrosodiphenylamine	28	---	130	37 U	3.3 U
Hexachloroethane	1,400	---	14,000	37 U	3.3 U
<i>Pesticides and PCBs</i>					
4,4'-DDE	---	---	---	5.4 P	2.9
4,4'-DDD	---	---	---	3.7	1.6
4,4'-DDT	---	---	---	2.5 P	1.2
Total DDT	6.9	50	69	11.6	5.7
Aldrin	10	---	---	0.16 U	0.16 Ui
Chlordane	10	37	---	1.0 Ui	0.55 J
Dieldrin	10	---	---	1.0 Ui	1.0 Ui
Heptachlor	10	---	---	0.29 U	1.0 Ui
Lindane	10	---	---	0.37 U	0.33 U
Aroclor 1016	---	---	---	2.2 U	2.0 U
Aroclor 1242	---	---	---	2.2 U	2.0 U
Aroclor 1248	---	---	---	100	13
Aroclor 1254	---	---	---	72	24
Aroclor 1260	---	---	---	52	17
Aroclor 1221	---	---	---	2.2 U	2.0 U
Aroclor 1232	---	---	---	2.2 U	2.0 U
Total PCBs	130	38 mg/kg TOC	3,100	224	54

Notes:

D - Reported value is from a dilution.

J - Result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

P - The GC or HPLC confirmation criteria was exceeded.

U - Chemical was undetected at the reported concentration.

i - The MRL/MDL has been elevated due to chromatographic interference.

Exceeds DMMP SL value

Exceeds DMMP ML value

# APPENDIX D

Sediment chemistry results compared with DMMP criteria.

Shaded concentrations exceed corresponding DMMP values. Criteria updated June 2005.

	DMMP			DMMU	
	Screening Level (SL)	Bioaccumulation Trigger (BT)	Maximum Level (ML)	C13-A	C123-Z
<b>Conventionals</b>					
Total Organic Carbon (%)	---	---	---	1.45	1.26
Total Volatile Solids (%)	---	---	---	5.06	3.76
Total Solids	---	---	---	60.1	68.0
Gravel (%)				0.35	0.97
Sand (%)		---	---	40.61	63.3
Clay (%)	---	---	---	11.0	7.69
Silt (%)	---	---	---	49.7	28.8
Fines (%)	---	---	---	60.7	36.5
<b>Metals (mg/kg, dry weight)</b>					
Antimony	150	---	200	0.13	0.18
Arsenic	57	507.1	700	3.97	4.81
Cadmium	5.1	11.3	14	0.552	0.382
Copper	390	1,027	1,300	30.3	19.8
Lead	450	975	1,200	29.5	14
Mercury	0.41	1.5	2.3	0.116	0.064
Nickel	140	370	370	21.9	19.2
Silver	6.1	6.1	8.4	0.162	0.088
Zinc	410	2,783	3,800	120	68.3
<b>Organics (µg/kg, dry weight)</b>					
<i>LPAHs</i>	5,200	---	29,000	1,117	133
Naphthalene	2,100	---	2,400	150 D	9.6
Acenaphthylene	560	---	1,300	160 D	12
Acenaphthene	500	---	2,000	49 JD	16
Fluorene	540	---	3,600	57 JD	11
Phenanthrene	1,500	---	21,000	500 D	64
Anthracene	960	---	13,000	150 D	14
2-Methylnaphthalene	670	---	1,900	51 JD	6.1 J
<i>HPAHs</i>	12,000	---	69,000	17,350	542
Fluoranthene	1,700	4,600	30,000	2,500 D	100
Pyrene	2,600	11,980	16,000	3,100 D	110
Benzo(a)anthracene	1,300	---	5,100	1,700 D	41
Chrysene	1,400	---	21,000	2,200 D	61
Benzo(b)fluoranthene	---	---	---	1,900 D	65
Benzo(k)fluoranthene	---	---	---	610 D	18
Benzo(a)fluoranthene	3,200	---	9,900	2,510	83
Benzo(a)pyrene	1,600	---	3,600	2,200 D	50
Indeno(1,2,3-cd)pyrene	600	---	4,400	1,400 D	43
Dibenz(a,h)anthracene	230	---	1,900	240 D	8.2
Benzo(g,h,i)perylene	670	---	3,200	1,500 D	46
<i>Chlorinated Hydrocarbons</i>					
1,4-Dichlorobenzene	110	---	120	32 U	2.8 U
1,2-Dichlorobenzene	35	---	110	22 U	2.0 U
1,2,4-Trichlorobenzene	31	---	64	25 U	2.3 U
Hexachlorobenzene	22	168	230	35 U	3.1 U
1,3-Dichlorobenzene	170	---	---	27 U	2.4 U

## SPECIAL WASTE PERMIT APPLICATION

Disposal Site: CRC \_\_\_\_\_ Finley Buttes \_\_\_\_\_ Wasco X \_\_\_\_\_

Generator name and address: Ash Grove Cement Company 13939 N Rivergate Blvd Portland, OR 97203

Billing name & address Same as above Waste description: Willamette River Dredge Spoils

Quantity: Approximately 2000 Cubic Yards > Frequency of disposal: ☒ One-time ☐ Monthly ☐  
Other: \_\_\_\_\_

Process generating waste: Off-loading spillage and from an overtime buildup of sediment

Waste address (include county & zip code): 13939 N Rivergate Blvd Portland, OR 97203 River Mile 2.9 Multnomah

Contact: Glenn F. Dollar Phone: 503 /286/1677/ext 423 Fax: 503 /289/2272

Transporter: Hickey Marine Phone: 360 /695/4553 Fax: /

### PHYSICAL CHARACTERISTICS AND DOCUMENTATION

Physical state: ☒ Solid ☐ Semi-solid ☐ Dusty ☐ Sludge ☐ Color: \_\_\_\_\_

Analytical results: ☐ TPH (PCS) ☐ Volatiles ☐ pH ☐ TCLP-Metals  
☒ BTEX ☐ Pesticides ☒ PCB ☐ Other: \_\_\_\_\_

Sample source: ☐ Pile ☐ In-ground ☐ Pit bottom ☒ Other: \_\_\_\_\_

Additional information: ☐ MSDS ☒ Process knowledge ☐ Other: \_\_\_\_\_

### NON-HAZARDOUS DETERMINATION

Under 40 CFR Part 261, is this a Listed or Characteristic waste? ☐ Yes ☒ No

Is waste classified as a state-only or provincial hazardous waste? ☐ Yes ☒ No

Is waste covered or restricted from landfilling by any permit? ☐ Yes ☒ No

Basis for non-hazardous determination: \_\_\_\_\_

### WASTE CERTIFICATION STATEMENT

I hereby certify that all information contained herein is true and correct, and the material described is properly identified, classified, packaged, labeled, and prepared as indicated. I certify this waste is not hazardous or dangerous as defined by the U.S. EPA, the State of Oregon, or the state or province of origin. I certify this waste does not contain any regulated radioactive materials. I certify that all samples used for this analysis are representative of the materials described herein. I will notify the company if there is a change in the composition of, or process generating this waste stream.

Glenn F Dollar  
Name (print)

EHS Manager  
Title

Glenn F Dollar  
Authorized representative's signature

10/24/06  
Date

Form EC1004200



## REPRESENTATIVE SAMPLE CERTIFICATION

**INSTRUCTIONS:** This form must be completed in order to determine the acceptability of the waste described in the Special Waste Permit Application for disposal at a municipal solid waste landfill. Analytical data for certain wastes is required for an adequate assessment of waste composition and regulatory status. This form is used to certify that the analytical data presented was derived from testing a *representative* sample, which reflects the physical characteristics and chemical components in the same proportion as the *total waste stream*. A representative sample may be obtained using methods specified in federal (40 CFR Part 261, Appendix I) or state regulations.

### SECTION A: DESCRIBE SAMPLING POINT OR LOCATION

☐ Pile    ☐ In-ground    ☐ Pit bottom    ☐ Drum    \* Other: Within Dredge Prism

### SECTION B: SAMPLING METHOD

- ☐ I have obtained a representative sample of the waste material described in the attached special waste permit application according to the sampling methods specified in 40 CFR Part 261.
- \* I have obtained a representative sample of the waste material described in the attached special waste permit application by an equivalent method.

### SECTION C: REPRESENTATIVE DATA CERTIFICATION

Generators' name: Ash Grove Cement Company

Waste type: Dredge Spoils

Date sample collected: June 2005

Samplers' name: Jerry Ramsden

Samplers' employer: Parsons Brinkerhoff

### SECTION D: REPRESENTATIVE SAMPLE CERTIFICATION

I hereby certify that the analytical data presented was derived from testing a representative sample taken in accordance with one of the methods listed in Section A of this form.

Glenn F. Dollar  
Name

Glenn F. Dollar  
Authorized representative's signature

EHS Manager  
Title

6/24/06  
Date

## SPECIAL WASTE INSTRUCTIONS

- The generator must determine if the waste is hazardous or dangerous before completing a permit application.
- The special waste permit application must be in the name of the generator of the waste and signed by an authorized representative who is responsible for the accuracy of all information submitted.
- Recertification is required for on-going special waste streams prior to the expiration date.
- A copy of the approved special waste permit must be shown to the gatehouse attendant upon delivery at the facility.

DISPOSAL SITE:      CRC \_\_\_\_\_      FINLEY BUTTES \_\_\_\_\_      WASCO   X  

*- To be completed by disposal company -*

Generator: \_\_\_\_\_

Customer: \_\_\_\_\_

Waste: \_\_\_\_\_

Instructions: \_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

Permit No: \_\_\_\_\_

Expiration date: \_\_\_\_\_

Previous No: \_\_\_\_\_

Landfill report: Yes / No

Environmental approval: \_\_\_\_\_

**Glenn Dollar**

---

**From:** Reece Vernon [ReeceV@WasteConnections.com]  
**Sent:** Tuesday, October 31, 2006 11:22 AM  
**To:** glenn.dollar@ashgrove.com  
**Subject:** Pre-Approval for Special Waste disposal

Glenn,

This email is in response to your October 26, 2006 request for approval to dispose of dredge spoils from Ash Grove Cement, at the Wasco County Landfill.

The dredged material has been described as limestone rock from off-loading spillage and river sediment built up over time. Based on the analytical data and Special Waste Permit Application you provided, Waste Connections gives preliminary approval for disposal of this material as special waste at Wasco County Landfill.

The project is scheduled to begin in July 2007 and is expected to be completed by October 2007. Waste Connections will issue a special waste disposal permit prior to the start of the project. A copy of the permit must accompany each load of waste material transported to Wasco County Landfill.

Please call me with any questions regarding the issuance of the special waste permit. Thank you.

Reece Vernon  
Waste Connections, Inc.  
P.O. Box 61726  
Vancouver, Washington 98666

phone 360.695.4858 x317  
fax 360.695.5091

10/31/2006

Appendix64-000139

Hickey Marine Enterprises, Inc  
6801 NW Old Lower River Road  
Vancouver, WA 98660

Invoice:

2440

(360) 695-4553

Sold  
to

Ash Grove Cement Company  
13939 N Rivergate Blvd  
Portland, OR 97203

Ship  
to

2420 Rivergate Maint. Dredging  
13939 N Rivergate  
Portland, OR 97203

<u>Account</u>	<u>P.O. Num</u>	<u>Ship Via</u>	<u>Ship Date</u>	<u>Terms</u>	<u>Invoice Date</u>	<u>Page</u>
ASHGROVE	Glenn Dollar			Net 30	8/9/07	1

Charges for material dredged from your Rivergate facility and disposed and disposed at the  
Wasco County Landfill in the Dalles, OR

<u>Item</u>	<u>Quantity</u>	<u>Description</u>	<u>Unit Price</u>	<u>Extended Price</u>
MOB/DEMOB	1	Lumps Sum billing for Mobilization/Demobilization	30425.00	30,425.00
CURTAIN	1	Lumps Sum Billing for Installation, furnish, and remove Turbidity Curtain	25000.00	25,000.00
WATER QUALITY	1	Water Quality Monitoring	4197.50	4,197.50
DISPOSAL	1	Disposal of excess water	4703.50	4,703.50
DREDGE/DISPOSE	2465.41	Dredge and Disposal of material	69.00	170,113.29
CREDIT	1	Credit for drying agent	-792.49	-792.49

Ash Grove-Rivergate  
Original Invoice  
Received

AUG 15 2007

CO# \_\_\_\_\_  
Due Date \_\_\_\_\_  
Approved By \_\_\_\_\_

*8/16 - Vendor set-up*

Subtotal 233,646.80

Please Remit payments to:  
PO Box 291  
Vancouver, WA 98666

Total \$233,646.80



# HICKEY MARINE ENTERPRISES

6801 NW Old Lower River Road  
Vancouver, WA 98660  
(360) 695-4553 (503) 284-1140

M T W T F S S

Job Name Ash Grove Date 7/12/07

Job No. \_\_\_\_\_ Weather \_\_\_\_\_

Equipment: ☐ Sea Hawk ☒ Sea Vulture ☐ Sea Lion ☐ Viking ☐ 966 Loader ☒ Chetco

☐ Barge 174 ☐ Barge 34 ☐ BK5 ☐ Nova ☐ Barge 47 ☐ Barge Harvey A

☐ Manlift ☐ Other \_\_\_\_\_

Equipment Safety Checks Performed? ☒ Yes ☐ No

Personal Protective Equipment Safety Checks Performed? ☒ Yes ☐ No

Work performed today 0700 - START UP - weld plate in end of chetco - load  
Beam containment - rent Deck lines

1430 - Make up to Vulture

1440 - Depart for Ash Grove

1530 - on spot - Husky Back to End for chetco - crew tying Beam on

1635 - chetco on rig - 4 piece 20' Beam in

Back side of cell's

1650 - Depart for End on Husky

1730 - Secure

Don 10

Doug 10

Tim 10

14 J 6

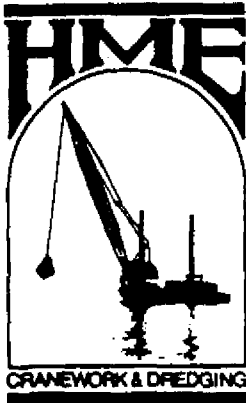
Scot 3 on Ash Grove

Al 3 Time

Bill 3

Extra work or delays (authorized by)

Sign \_\_\_\_\_



# HICKEY MARINE ENTERPRISES

6801 NW Old Lower River Road  
Vancouver, WA 98660  
(360) 695-4553 (503) 284-1140

M T W T H ~~F~~ S S

Job Name Ashgrove Cement Date 7/13/07

Job No. \_\_\_\_\_ Weather \_\_\_\_\_

Equipment: ☐ Sea Hawk ☒ Sea Vulture ☐ Sea Lion ☐ Viking ☐ 966 Loader ☒ Chetco

☐ Barge 174 ☐ Barge 34 ☐ BK5 ☐ Nova ☐ Barge 47 ☐ Barge Harvey A

☐ Manlift ☐ Other \_\_\_\_\_

Equipment Safety Checks Performed? (Yes) / No

Personal Protective Equipment Safety Checks Performed? (Yes) / No

Work performed today 0700 - start up - set anchors & boom around dredge area  
0810 - met w/ Northwest Natural Gas company rep about there gas  
line crossing at D.S. end of Dredge area - He was not concern  
about our activities as long as we stay 40' to 50' away.  
He DID say that Oregon Steel has a crossing in the area & would call  
them -

0830 - Oregon Steel called & I will meet w/ him at 0845 & determine there  
crossing where abouts. (No problem - line crosses at U.S. end of their  
property,

0840 - West Coast here - went to U.S. Ashgrove -

1100 - Bill & Al helping w/ curtain - Doug & Don

1200 - 1230 lunch

1230 - making final connection on boom

1320 - Begin Digging - ADJ - Anchors as needed -

1630 - Done Digging - grease & secure - Doug from U.S. side of cut to  
& of conveyor - 40' + - to grade

1700 - Done

Doug 9 1/2

Al

Don

Bill 8

Extra work or delays (authorized by)

3.3

3.2

3.7

3.6

Sign \_\_\_\_\_



# HICKEY MARINE ENTERPRISES

6801 NW Old Lower River Road  
Vancouver, WA 98660  
(360) 695-4553 (503) 284-1140

☒ M ☐ T ☐ W ☐ TH ☐ F ☐ S ☐ S

Job Name Ashgrove Date 7/16/07

Job No. \_\_\_\_\_ Weather \_\_\_\_\_

Equipment: ☐ Sea Hawk ☒ Sea Vulture ☐ Sea Lion ☐ Viking ☐ 966 Loader ☒ Chetco

☐ Barge 174 ☐ Barge 34 ☐ BK5 ☐ Nova ☐ Barge 47 ☐ Barge Harvey A

☐ Manlift ☐ Other \_\_\_\_\_

Equipment Safety Checks Performed? ☒ Yes / ☐ No

Personal Protective Equipment Safety Checks Performed? ☒ Yes / ☐ No

Work performed today 0700 - START up - reset Boom (tribitity)

0800 Digging -

1200-1230 lunch - To grade at Angle point

1245 - Digging Able

1430 - Done - Take off Bucket

1530 - Secure

Extra work or delays (authorized by)

0830 Test

10:30

12:30

2:30

Loaded Debris at 14:30

11.0 11.5

10.9 11.4

Sign \_\_\_\_\_



# HICKEY MARINE ENTERPRISES

6801 NW Old Lower River Road  
Vancouver, WA 98660  
(360) 695-4553 (503) 284-1140

M	X	W	T	H	F	S	S
---	---	---	---	---	---	---	---

Job Name Ashgrove Date 7/17/07

Job No. \_\_\_\_\_ Weather \_\_\_\_\_

Equipment: ☐ Sea Hawk ☐ Sea Vulture ☐ Sea Lion ☐ Viking ☐ 966 Loader ☐ Chetco

☐ Barge 174 ☐ Barge 34 ☐ BK5 ☐ Nova ☐ Barge 47 ☐ Barge Harvey A

☐ Manlift ☐ Other \_\_\_\_\_

Equipment Safety Checks Performed? (Yes) / No

Personal Protective Equipment Safety Checks Performed? (Yes) / No

Work performed today 0700-START UP - Break Boom -

0830 - Harvey on site - Chetco To YARD via TIDEWATER

0855 - Loading Boom

0930 Break

0945 Load Boom

11:30 move to yard - MOV

12:10 Lunch - spotted yard -

maint

3:30 Secure

Extra work or delays (authorized by) \_\_\_\_\_

Sign \_\_\_\_\_



**EBS**  
**Environmental Business**  
**Solutions, Inc.**

11954 NE Glisan  
Portland, OR 97220  
www.enbusol.com  
ebsolutions1@uswest.net

Client  
COPY

July 25, 2001

John Hone  
Ash Grove Cement Company  
Portland, Oregon

Re: Hydraulic Oil Clean-up status report

Dear John:

On July 11, 2001, Environmental Business Solutions (EBS) performed excavation services at the south end of your railcar unloading silo. The scope of this project was to make a preliminary evaluation of the extent of petroleum contamination that was caused by leaking, hydraulically operated, railcar moving, power units without causing too much disturbance to the railroad track substructure, and to remove and dispose of any contaminated soil encountered.

The excavation consisted of removing contaminated soil from a volume of approximately 10 feet from the sump along the north railroad track, 8 feet wide measured perpendicular from the railroad tracks and 6 feet deep. The excavation depth was determined pursuant to your direction. This amounted to removing approximately ten cubic yards of contaminated soil. At the completion of the excavation, two samples were obtained from the excavation pit: one from the sidewall under the railroad tracks and one from the pit floor.

The results are as follows:

	Diesel	Heavy Oil	During the excavation, visually and olfactorily contamination did not appear to be present at the bottom of the excavation pit. However, the analytical results (attached) indicate
Pit Floor	1900ppm	6400ppm	
Sidewall under railroad tracks	5400ppm	28,000ppm	

that there still remains a low level of petroleum hydrocarbon in the pit floor and higher levels under the tracks. From a visual inspection of the sidewall of the pit under the railroad tracks, the contamination can be seen.

#### CONCLUSION

Before evaluating the project data and discussing cleanup requirements, several site characteristics should be mentioned.

The release is located approximately 250 feet to the north of the Willamette River and grade is approximately 30 feet above the river surface level. The site is located in a flood plain with the Union Pacific Railroad switching yard located approximately 50 feet directly to the east of the excavation site. The history of the activities occurring at the Ash Grove facility and the Union Pacific Railroad yard are unknown to EBS, however, widespread subsurface petroleum contamination is not uncommon with a rail facility. The water table at the excavation site has not been determined.

The analytical results from and visual inspection of the pit sidewall under the railroad tracks indicated that petroleum contamination is fairly substantial under the railroad tracks and may extend to the opposite side of the railroad tracks. The distance the contamination has migrated toward the river is unknown but may be further than on the excavated side due to gradient toward the river.

The analytical results from the pit bottom indicate that low-level petroleum contamination remains at that depth. However, this does not necessarily indicate that the contamination was a result of the leaking car moving equipment but could exist at these levels throughout the entire floodplain area because of another offsite source. No samples were obtained and analyzed to prove or disprove this hypothesis. However, as mentioned above, the railroad yard, which includes a diesel fueling facility and a great deal of rail activities, could have caused petroleum spillage and may be up gradient from the Ash Grove facility.

Regarding spill clean-up requirements, the Oregon administrative rules (OAR) require that in the event of a release of a hazardous substance, such as hydraulic fluids, cleanup shall be implemented to achieve protection of human health and the environment, and prevent migration of hazardous substances in the environment. It is EBS' understanding that two factors may support a continued investigation and contaminated soil excavation.

First, because of a possible shallow ground water condition and close proximity to the Willamette River, the extent and contamination concentration should be determined. Secondly, the contamination could pose a human threat relative to the possibility of worker exposure to diesel oil, which contains benzene, while trenching or vapors entering confined spaces such as the adjacent basement area.

There are two remedies to ensure compliance. It is acceptable to leave a pocket of contamination in place, but to do this, it is required to perform a risk-based assessment which takes into account the concentration of hazardous substance, the volume of contaminated media, and exposure routes to human health and the environment. This will require determining all hazardous substance characteristics (i.e., petroleum concentrations, heavy metals, volatiles, etc.) through soil sampling and testing and the exact extent of the pocket. The other option is to completely remove all sources of contamination. This would require of course, some excavation under the railroad tracks.

Please keep in mind the concern about the historical activities in the area and the adjacent railroad yard. If there is background contamination throughout the floodplain area we may not be able to achieve the absence of petroleum contamination. One recommendation to better understand the extent of contamination prior to proceeding with the new construction of the building and causing any delays at that time will be to drill through the concrete area to the south of the railroad tracks near the south side sump and make subsurface probes to try and determine the extent of the heavier contamination. It would also be productive to analyze a background sample to evaluate widespread petroleum presence.

I hope our efforts have provided some initial insight.

Sincerely,

Arthur Marx  
Senior Environmental Engineer